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Development of a Sanitary Landfill Environmental Impact Statement for Snohomish County, Washington

Snohomish County Dept of Public Works, Everett, Wash

Prepared for

Environmental Protection Agency, Seattle, Wash Solid Waste Management Program

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DEVELOPMENT OF A SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT FOR SNOHOMISH COUNTY, WASHINGTON

by

Snohomish County Department of Public Works
Solid Waste Division
County Administration Building
Everett, Washington 98201

Prepared for

U.S. Environmental Protection Agency
Region X
Air and Hazardous Materials Division
Solid Waste Management Program
1200 Sixth Avenue
Seattle, Washington 98101

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The report briefly describes the process of preparing an environmental impact statement for a major, regional sanitary landfill in Snohomish County, Washington. The statement was prepared pursuant to the Washington State Environmental Policy Act (Chapter 43.21C, Revised Code of Washington), which parallels the National Environmental Policy Act. The report stresses the value of developing the EIS in concert with the site selection and design activity. Copies of both the Draft and Final Environmental Impact Statements are appended.

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Air and Hazardous Materials Division
Solid Waste Management Program
1200 - Sixth Avenue
Seattle, Washington 98101

October 1975

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PREFACE

In March of 1973, Snohomish County, Washington, was awarded $150,000 under Section 204 of the Solid Waste Management Act as amended. The purpose of the award was to provide partial support to the County in the development of a regional solid waste management system. The funds provided by the EPA marked the beginning of a comprehensive, six year solid waste management implementation program.

The primary objective of the grant program was to develop and make available for public examination an operating, model sanitary landfill, together with the associated design plans, reports, and environmental impact statement. As of this date, the County has not been successful in achieving an operating landfill. However, the design plans, reports, and an environmental impact statement have been completed. These documents, in themselves, should serve as a valuable resource to other persons confronted with the need to develop final disposal sites for solid waste.

To provide for the dissemination and public review of this information, a series of three reports has been prepared. These reports are as follows:

1. "Development of a Regional Solid Waste Management System For Snohomish County, Washington."

2. "Development of a Model Sanitary Landfill Site Design For Snohomish County, Washington."

3. "Development of a Sanitary Landfill Environmental Impact Statement For Snohomish County, Washington."

Each report relates to a specific area of interest and stands alone in that regard. At the same time, each report discusses only one aspect of a broad planning and implementation effort. Readers interested in a more thorough analysis of any of the specific reports, or a more general analysis of the Snohomish County Solid Waste Management Implementation Program, should review all three of the reports.

ACKNOWLEDGEMENTS

The Snohomish County Comprehensive Solid Waste Management Implementation Project has benefited from considerable information and support supplied by various governmental, private, and citizen organizations. The special assisstance of the following persons and organizations is gratefully acknowledged:

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SUMMARY

The purpose of this report is to give the reader some idea of what is necessary to prepare a final environmental impact statement for a modern sanitary landfill.

The sanitary landfill, in this case, is the Cathcart Sanitary Landfill, located in northwest Washington in Snohomish County. The Environmental Impact Statement appended to this report was used by Snohomish County to: 1) Comply with statutory requirements and 2) aid the County in selecting a sanitary landfill site which would have, among other things, the minimum amount of environmental impact.

This environmental impact statement is unique in that it was not prepared after the sanitary landfill site was finally selected and all of the concomitant impacts identified; but, rather, this environmental impact statement was prepared as part of the site selection and site design process. An impact statement was prepared for this landfill as well as for another candidate sanitary landfill, thus giving the County an opportunity to objectively compare two sanitary landfill sites with regards to environmental impact. By preparing an environmental impact statement in this manner, the County is assured of:

1) Having picked the site with the minimum impact and 2) having satisfied legal state environmental policy requirements at the same time.

I. INTRODUCTION

The Cathcart Sanitary Landfill Environmental Impact Statement was developed as an integral part of a comprehensive sanitary landfill design program for Snohomish County, Washington. This design program was initiated after completion of a solid waste management planning study, WASH-USE-1, conducted by the County with funding provided in part by the Department of Housing and Urban Development. The solid waste management planning program recommended that sanitary landfills be developed in the County to replace the then existing solid waste disposal system consisting of fourteen open dumps and/or improperly operated landfills. A number of potential sanitary landfill sites were identified in the planning program and these served as the basis for the sanitary landfill design project.

The initial step of the sanitary landfill design program was the development of a work program. This was done to define the content of the design project in detail. The work program described the inter-relationships among the major work elements which included a public information program, the landfill site evaluation and design, and the development of the environmental impact statement.

A prime objective of the sanitary landfill design project was the implementation of a solid waste disposal site which minimized environmental impacts to the greatest extent possible. In order to do this, it was determined that both the public information program and the development of the environmental impact statement would become an integral part of the design process. Potential impacts could then be assessed during the sanitary landfill design process, enabling the selection of design features to minimize or abate these impacts. It also enabled development of the environmental impact statement during, rather than after, the completion of the design.

Additionally, to be in complete compliance with existing Washington State law, an environmental impact statement and review process was mandatory. The Washington State Environmental Policy Act, as well as other local and State regulations, clearly required the preparation of an environmental impact statement for a project of the magnitude of a sanitary landfill.

The State Environmental Policy Act of 1971 (Chapter 43.21C, RCW) was passed in the first extraordinary session of the 42nd Legislature of Washington. The law sets out general state-wide environmental policy and procedures.

The law was patterned after the National Environmental Policy Act of 1969 (P.L. 91-190) and is closely parallel to that national law, both in intent and directive. The language of the state law is contained mainly in RCW 43.21C.030 (c), and directs performance as follows:

> "The legislature authorizes and directs that, to the fullest extent possible: (1) The policies, regulations, and laws of the State of Washington shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all branches of government of this State, including state agencies, municipal and public corporations, and counties shall:
>
> ". . .
>
> " (c) Include in every recommendation or report on proposals for legislation and other major actions significantly affecting the quality of the environment, a detailed statement by the responsible official on:
>
> " (i) the environmental impact of the proposed action;
>
> " (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented;

" (iii) alternatives to the proposed action;

" (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and,

" (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented;

The State Environmental Policy Act specifically dictated the steps this environmental impact statement or any other environmental impact statement would have to take. Briefly, they are as follows:

1. A decision has to be made whether an environmental impact statement is necessary or not. In this case, due to existing local and State law, an environmental impact statement was mandatory for this project.

2. The "first responsible agency" prepares a draft environmental impact statement and makes a public announcement of the availability of that draft statement.

3. The draft statement is put out for public review for a minimum of 30 days.

4. A final environmental impact statement is prepared by "first responsible agency" with substantive comments which were

received during the draft review attached. Embodied within the final impact statement should be responses to those substantive comments which were received.

5. The final environmental impact statement is filed along with the comments with the Office of the Governor, the Washington State Department of Ecology, and the Ecological Commission. Additionally, this statement is available to the public.

6. The final step in the environmental impact statement process is to utilize the statement/comments for evaluation of the impact of the project during the decision making process.

It is very important that the reader understand the difference between the draft environmental impact statement and the final environmental impact statement. The draft impact statement is the agency's first attempt at identification of all of the environmental impacts. Because no one agency contains "in-house" all of the expertise necessary to identify every potential impact, this draft statement is circulated and reviewed by persons, agencies and corporations, and individuals who, hopefully, will have this expertise. Because of this, frequently, errors, omissions, and inaccuracies are found in draft statements. This is good. This is what the process is all about--to identify the weaknesses of the draft statement.

Draft environmental impact statements receive wide circulation among these "agencies of expertise" so, that , inadequacies may be identified. An example of the agencies receiving and reviewing one of these documents may be found in Appendix A (deis), Page 2. A similar list also appears on Page 2 of the Final Environmental Impact Statement for the Cathcart Sanitary Landfill herein noted as Appendix B.

While the two documents, the draft impact statement and the final impact statement, look very similar, scrutiny will reveal significant and important differences. By examining the substantive comments received during the draft review process (which are appended as a supplement to the final environmental impact statement), one can see where fault was found with the draft statement; and comparison of the draft and final should show that these faults were corrected. In the case of the Cathcart Sanitary Landfill, the preparation of the draft environmental impact statement, the preparation of the initial design, and the final selection of the site were all done concurrently.

II. DEVELOPMENT OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

The first phase of the sanitary landfill design program included the final selection of a site. The planning program undertaken previously by Snohomish County had identified a number of alternative landfill sites, ranked according to transportation cost and planning criteria. To allow a final site selection, an engineering evaluation of the sites was conducted. Part of this final evaluation included a determination of the potential environmental impact which could result if the site were developed and operated as a sanitary landfill. In order to assess potential environmental impact, a detailed outline was first developed to describe the general contents of an environmental impact statement for a sanitary landfill. The outline included a listing of the major types and causes of environmental impact. The outline was then used to develop criteria for evaluating the alternative sites.

The development of the environmental impact statement outline was done in part by combining information from a variety of sources. Of major input were guidelines published by the State of Washington and by the

U.S. Environmental Protection Agency for use in developing environmental impact statements. Other EPA documents also served as a basis for impact identification, including "Sanitary Landfill Design and Operation" by Brunner and Keller and "Solid Waste Disposal: Proposed Guidelines for Land Disposal of Solid Waste" published in the April 27, 1975 Federal Register. The major categories of impacts that were identified at this initial stage were:

1. Topography: Changes in contour and drainage.
2. Vegetation: The amount of vegetation removed and the significance of removal.
3. Air quality: Degradation of air quality in the vicinity of the disposal site, including odors.
4. Water quality: a) degradation of surface water quality; b) degradation of groundwater quality.
5. Fish and wildlife: Loss or damage to fish and wildlife.
6. Aesthetics: Visual changes
7. Noise: Increased noise levels in the site vicinity.
8. Health and safety: Potential damage to human health.

The causes of impacts identified in the outline were then analyzed with respect to sanitary landfills along with methods or approaches for eliminating or reducing these impacts. In this way, specific site features could be identified which would enhance or hinder impact reduction. These identified site features then became a major basis for the selection of a specific site. However, other factors were important to specific site selection as well including site access, land use consideration, and factors affecting the operation and life of a sanitary landfill developed at the site. The site selection process included analyses and evaluations by a special consultant in soils and geology to determine potential operating characteristics specific to the sites. The geologist also helped in determining the ability to develop the sites to prevent surface and groundwaters from flowing into proposed waste disposal areas and in turn to prevent polluted waters and leachate from contaminating surface and groundwaters.

During the final site selection process, two potential sites were identified as candidates. Neither of the two were ideal, however, as each had limitations as to the ability to develop the site as an economical sanitary landfill while at the same time preventing the pollution of ground and surface waters in the site vicinity. A third site, the proposed Cathcart site, was then selected for analysis and appeared to have better characteristics. In order to make a final site selection, a preliminary engineering design was completed for each site. These preliminary designs included preliminary selection, sizing, and analysis of methods for eliminating or reducing impacts with emphasis on drainage control and leachate attenuation, collection, and treatment. Rough drafts of environmental impact statements were completed for the sites for use in helping to make a final site selection. On the basis of this information, the proposed Cathcart sanitary landfill site was selected for development.

After final selection of the Cathcart site, a design process was initiated which was aimed at development of the final site and facilities design and the development of the draft environmental impact statement. The preliminary reports completed during the site selection process served as the basis for defining the work required to complete the final design.

In effect, the design process became one of continually building on and refining design features and analyses as both the development of the draft environmental impact statement and the site design progressed. As impact analyses were conducted, design features were developed or refined to reduce or eliminate identified adverse impacts. These new or refined design features in turn then required refined impact analyses. The process of integrating the development of the design and the environmental impact statement was also extremely useful in defining both information requirements and methods for obtaining this information. Since both the development of the design and the development of the draft environmental impact statement required similar types of information for analyses, it was possible to obtain information that satisfied both needs. This helped reduce the effort associated with information gethering, expecially in the area of soils and geologic investigations where costs of obtaining needed information can be considerable.

The development of the draft environmental impact statement as part of the overall design process enabled concentration on areas where impacts associated with the proposed sanitary landfill could be most severe. Environmental impacts were identified at the earliest possible point in the program and analyses continued during the design process. The impact analyses then acted as a guide for the design, defining areas where more effort was required to develop methods and design features to reduce or minimize impacts. As a result of this process, the design concentrated most heavily on solving problems associated with drainage control, water pollution, and noise attenuation.

When it was felt that all of the environmental impacts associated with this project had been adequately identified and responded to, the draft environmental impact statement document was prepared and circulated. While the Washington State Environmental Policy Act requires a minimum 30-day review period for draft environmental impact statements, this statement was given a 60-day review period due to the sensitive nature of the project.

The Draft was mailed to interested agencies and persons, as has been described before, and, also, to local public libraries. By providing a copy to the local public libraries, the burden of reproduction and distribution placed on the agency providing the document is diminished. When people request copies of it for their own personal use, they can be directed to a local public library possessing a copy of the statement. This also provides a location where the document can be reviewed in perpetuity because it may possess some value historically to someone in the future.

III. DEVELOPMENT OF THE FINAL ENVIRONMENTAL IMPACT STATEMENT

Once the draft environmental impact statement had been mailed out and appropriate news releases published, the sanitary landfill project became general knowledge. Immediately, Snohomish County began to get requests for information regarding the proposed sanitary landfill project. Additionally, groups began to organize to oppose the project and petitions were submitted to the Snohomish County Commissioners. The County began to put together a "low profile" public relations campaign. Meetings were held with dissident groups and families in the primary impact area of the project to better acquaint them with the planning, design, and impact of the Cathcart Sanitary Landfill.

Through these series of meetings, several important things were accomplished. Preconceived, erroneous ideas on the parts of the inhabitants of the primary impact area were removed; concerns and fears of residents in the vicinity of the landfill were identified; and County staff personnel were prepared for the questions that they would receive at various hearings by the questions that they did receive at these early meetings.

The residents showed great concern for the environmental impacts identified in the draft statement and wanted evidence that these identified impacts would be mitigated somehow. Concerned residents were encouraged to submit substantive comments to Snohomish County for inclusion in the final environmental impact statement. Meanwhile, other recipients of the draft environmental impact statement were beginning to respond with their substantive comments. As the County received these comments from the various reviewing entities, each was discussed and evaluated. When a response required that a change in the draft statement be made, such change was made.

To insure that the users of the final environmental impact statement would receive an objective appraisal of these response comments, the comments themselves, in original form are attached to the final environmental impact statement. Every comment received relative to the statement has been attached. In the front of the final environmental impact statement will be found a summary sheet summarizing the changes between it and the draft environmental impact statement. This appears on Page 3 of Appendix B.

IV. CONTENT OF THE ENVIRONMENTAL IMPACT STATEMENT

The development of the EIS required input and expertise from a number of specialized disciplines. The first chapter deals with a description of the proposed action, relying heavily on the landfill design study for the project description. Information was also developed by the Snohomish County Planning Department for this chapter to discuss the relationship between the proposed sanitary landfill and existing laws, policies, and plans.

The second chapter of the EIS describes existing conditions at the site and its vicinity. This description required information on the climate in the area which was available from the U.S. Weather Service. Topography was described through the use of maps and visual impressions of the area. The description of the geology and soils of the site and its vicinity required extensive investigations in order to develop an understanding of specific conditions. These investigations included taking soils borings for analysis and were conducted by a qualified soils engineer and geologist.

The hydrology and drainage at the site was described through the analysis of topography maps and information gathered in the soils and geology study. The vegetation and wildlife at the Cathcart site were described as an ecological community rather than separate features. This was done by analyzing low-level NASA photographs on vegetation and ground cover. Each life zone category has basic characteristics as to the type of wildlife which can be expected to inhabit it. In this way, a description of the ecological community could be done without extensive field investigations. However, it was necessary to check information developed in this manner with actual field surveys.

In addition to natural features, Chapter 2 describes the manmade environment of the site and its surroundings. Much of this information was developed by the Snohomish County Planning Department. A special noise study was conducted, however, to document noise levels in the area surrounding the site.

The third chapter of the EIS deals with impacts which could be expected from developing and operating a sanitary landfill at the Cathcart site. Impacts were analyzed for each of the existing conditions, and included impacts on topography, geology and soils, water quality and drainage, the ecological community, socio-economic functions, land use and zoning, aesthetics, health, traffic circulation, air quality, and noise. Each one of these major impacts required specific analyses, many of which were developed as part of the site design. This enabled a discussion of potential remedial measures for each impact to be developed as part of the technical design study. In Chapter 4, unavoidable adverse impacts are discussed and this discussion was based again on information from the technical design study and the impacts analyzed in Chapter 3.

The fifth chapter of the environmental impact statement discusses alternatives to the proposed project. Much of this information was developed during the planning study which preceeded the design project. Specific alternative concepts associated with development of the landfill at the Cathcart site were developed in the design program, however.

Chapter 6 discusses the long-term productivity of the Cathcart area in relationship to this short-term land use. In the last chapter, Chapter 7, is a recapitulation of the irreversible and irretrievable resource commitments with the proposed action. These are primarily the same impacts which were discussed in Chapter 3 in detail.

After the last chapter in Appendix A of the final environmental impact statement (Appendix B), the reader will find the comments which Snohomish County received during the review of the draft environmental impact statement. Following that is an inventory of life zone sub-category vertebrates which might possibly be found at the site. This inventory is unique in that identification of the various species which might exist is done by the various life zone sub-categories. That is to say, once a life zone sub-category has been identified, then one can hypothesize what certain types vertebrates might be found in that life zone sub-category. While there is no guarantee that these vertebrates are there, the possibility is there. For example, how common the bald eagle is in Life Zone Sub-category 14 is not necessarily how common it is in Life Zone Sub-category 14 of the Cathcart site. Even though it is highly unlikely that bald eagles are present anywhere near the Cathcart site, bald eagles are still listed as vertebrates common to Life Zone Sub-category 14, which is found on the site.

V. CONCLUSIONS

When an agency is faced with the prospect of selecting, constructing, and implementing a sanitary landfill project, much can be gained by following the process described here. By concurrently preparing the site design and the environmental impact statement, site selection comparisons can then be made wherein not only cost and ease of operation are compared, but, also, the impact on the environment can be compared between the various candidate sites. By utilization of the environmental impact statement process in this way, preparation of the document can be more than just a token effort to fulfill statutory requirements.

Appendix "A"

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Submitted by

Snohomish County Department of Public Works
Solid Waste Division
County Administration Building
Everett, Washington 98201

SUMMARY SHEET

Sponsor:

Snohomish County Department of Public Works, Solid Waste Division.

Type of Proposed Action:

Construction and operation of a sanitary landfill.

Official Title of Proposed Action and Summary of the Proposed Action:

Cathcart Sanitary Landfill.

The Snohomish County Department of Public Works proposes to establish a sanitary landfill on 55 acres of a 200-acre parcel located between the Lowell-Cathcart Road and 152nd Street S. W. The proposal is a response to the prescriptions of the Department of Ecology's Minimum Functional Standards for Solid Waste Handling and the Snohomish County Health District Regulations Governing Solid Waste Handling. The proposal is also in response to the recommendations of the Snohomish County Comprehensive Solid Waste Management Plan, which cited the construction of an adequate solid waste disposal site as one of the County's highest environmental priorities.

The proposed site is sufficient to accommodate solid waste from a system of drop boxes and transfer stations for approximately eight to ten years. If additional fill areas are utilized, or if the 55-acre site is filled to higher elevations, site capacity will approach, but not exceed, 20 years.

Summary of Environmental Impacts:

Primary environmental impacts attendant with this proposal include the modification of natural topography and vegetation cover, the destruction of wildlife habitat and the alteration of natural ground and surface water patterns. Several potential human use impacts, such as possible depreciation of land values, ambient noise level increases and increased truck traffic levels, are also addressed. The subject document contains several proposals which mitigate the severity of the aforementioned potential impacts.

Summary of Alternatives:

Alternatives addressed within the appropriate section of this document include alternative solid waste disposal systems such as continuance of the present County disposal practices, regional rail haul disposal, alternative locations, alternative disposal methods (incineration, pyrolosis, recycling, milling and billing), as well as alternative land disposal concepts at the proposed site.

Review Period:

Comments must be returned by Monday, March 17, 1975, to be considered for inclusion within this document. Address all comments to the Snohomish County Department of Public Works, Solid Waste Division, County Administration Building, Everett, Washington 98201.

Recipients of the Document:

Department of Agriculture
Department of Emergency Services
Department of Commerce and Economic Development
Department of Ecology
Department of Fisheries
Department of Game
Department of Highways
Department of Natural Resources
Department of Social and Health Services
Interagency Committee for Outdoor Recreation
Parks and Recreation Commission
Planning and Community Affairs Agency
Office of Programmed Planning and Fiscal Management
Department of Interior, Bureau of Sports, Fisheries and Wildlife
Puget Sound Air Pollution Control Agency
U.S. Environmental Protection Agency
Snohomish County Planning Department
Snohomish County Health District
Puget Sound Governmental Conference
Economic Development Council of Snohomish County
Snohomish County Agricultural Extension Agent
Snohomish County Comprehensive Health Planning Council
U.S. Forest Service
Professor Ernst Gayden
Mr. Robert Scott
Snohomish Public Library
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INTRODUCTION

The purpose of this statement is to analyze and comment on the environmental impact of the proposed construction and operation of the Cathcart Sanitary Landfill located in the southwestern portion of Snohomish County.

In accordance with the State of Washington Environmental Policy Act of 1971, consideration must be given to the effect on the productive and enjoyable harmony between man and his environment, to evaluate possible environmental damage and to determine the impact on the health and welfare of man. The statement further considers the impact the project will have on the state policy to "(1) foster and promote the general welfare; (2) create and maintain conditions under which man can exist in productive harmony, and (3) fulfill the social, economic and other requirements of present and future generations of Washington citizens."

The draft report which follows is intended for careful review by responsible public agencies and interested citizens. Comments on the issues raised herein and on issues whose importance may have been overlooked, are most welcome. Snohomish County, the sponsoring agency, authorized Stevens, Thompson & Runyan, Inc. to assist in preparing this environmental impact statement. Northwest Environmental Technology Laboratories, Inc. was employed by Stevens, Thompson & Runyan, Inc. to assess the impact of the project on noise levels. John Garcia, a graduate student in the Department of Forestry, University of Washington, supplied information on the vegetation and wildlife aspects of the project site.

This draft environmental impact statement and the findings contained herein are the combined efforts of the above named and represent an interdisciplinary approach to the decisions relating to the recommended design and operation for the project. The report which follows identifies methods and procedures which assure that unquantified environmental amenities and values within the community affected by the project have been given appropriate consideration in the decision making process along with economic and technical consideration.

A list of specific agencies who were requested to review this draft environmental impact statement can be found in Appendix A of this report.

CHAPTER 1

THE PROPOSED ACTION

PURPOSE AND JUSTIFICATION

Solid waste generated in Snohomish County is presently disposed of at fourteen separate solid waste disposal sites within the county. Five of these disposal sites are owned and operated by Snohomish County, while the remaining nine disposal sites are owned and operated by municipalities. These existing disposal operations do not meet the Washington Department of Ecology, Minimum Functional Standards and the Snohomish Health District regulations governing solid waste handling and must be terminated or modified. The Department of Ecology has set 1975 as the date that all solid waste handling facilities must be in compliance with these standards. The solid waste disposal site operated by the City of Everett, which receives the largest portion of the area's waste, will reach capacity within the year and operation must be terminated at that time. A sanitary landfill capable of meeting state and local regulations and modern environmental standards is thus required to meet the solid waste disposal needs of Snohomish County residents and businesses. The ***Interim Report, Solid Waste Management Planning,*** completed in 1971, was developed as a part of the HUD funded WASH-USE-1 program and addressed the County's solid waste management problems. One of the study's recommendations of highest priority was the immediate construction and operation of sanitary landfill facilities capable of meeting all health and environmental requirements for the county.

This report and subsequent information, developed as a part of the overall solid waste planning effort, have been subjected to numerous citizen and public agency reviews. In 1971, the Snohomish County Solid Waste Steering Committee and the Snohomish County Association of Cities and Towns passed resolutions supporting the Interim Plan and recommended that the Board of County Commissioners take several specific steps towards its implementation. The Commissioners have acted in accordance with these resolutions.

Snohomish County is presently completing work on the Comprehensive Solid Waste Management Plan required under the State Solid Waste Management Act of 1969. Implementation of the landfill portion of the plan preceeded the plan's final approval because of the critical disposal problems in the county. This was the reason for the ***Interim Report.*** Continued review of the final plan's development has resulted in a number of actions related to its ultimate approval, however.

In late 1973, a summary of the study's findings was distributed to the Solid Waste Management Steering Committee. In early 1974, the Committee passed a resolution supporting the Comprehensive Solid Waste Management Plan as proposed; the committee also encouraged all of the cities and towns of the county to support the plan. The Snohomish County Association of Cities and Towns responded to this recommendation by passing a resolution supporting the plan as proposed.

The entire study process has identified a need for new disposal sites in order to solve short-term site life, environmental and public health problems. In addition, the Washington Department of Ecology has noted the need to provide disposal sites to comply with state laws and the Washington Administrative Code. For example, WAC 173-301-354 provides as follows:

> Satisfactory emergency disposal of input solid waste shall be provided in the event of a major incinerator plant breakdown.

The Department's position, as stated by letter dated March 13, 1974, is as follows:

> Although we do not wish to discourage incinerator or resource recovery systems, it should be recognized that some land disposal is necessary should such options be employed. Land disposal is necessary to:
>
> 1. Provide for the disposal of incinerator residue.
> 2. Provide emergency backup for incinerators and resource recovery systems.
> 3. Provide disposal for bulky, industrial and other solid waste which cannot be incinerated or recycled under current technology.

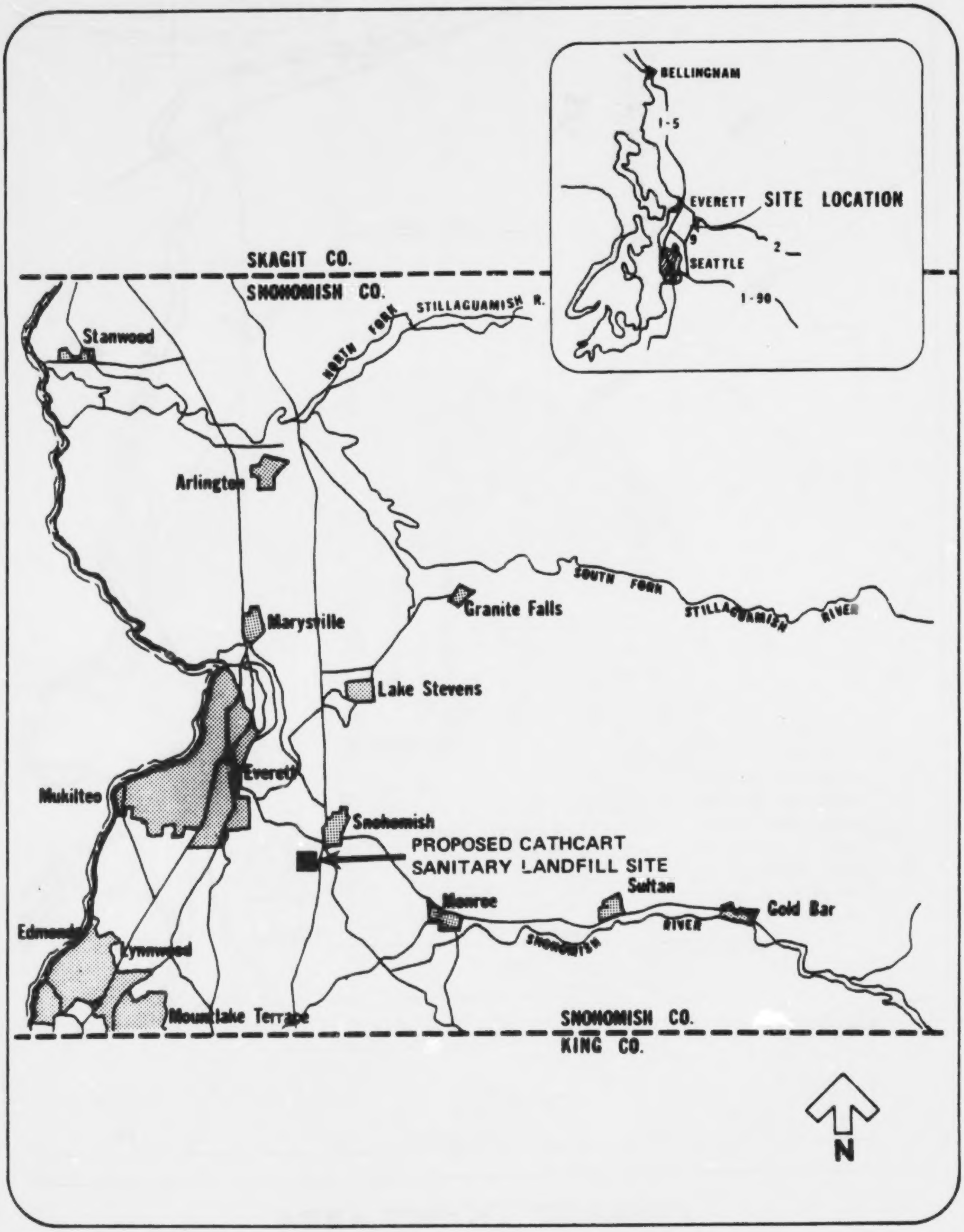
The U.S. Environmental Protection Agency concurs with this position. The proposed Cathcart Sanitary Landfill would serve to implement the recommendations of the entire planning study effort, it would respond to the requirements of state law and proper environmental policy, and it would meet the need to replace rapidly depleting disposal sites for the county.

PROJECT LOCATION

The proposed Cathcart Sanitary Landfill site is located, as shown on Figures 1-1 and 1-2, south of the City of Snohomish. State Route 9 (Woodinville Cutoff) runs parallel to a portion of the site on the east, while the site lies roughly between the Lowell-Cathcart Road (Bluff Road) and 152nd Street S.E. on the north and south, respectively.

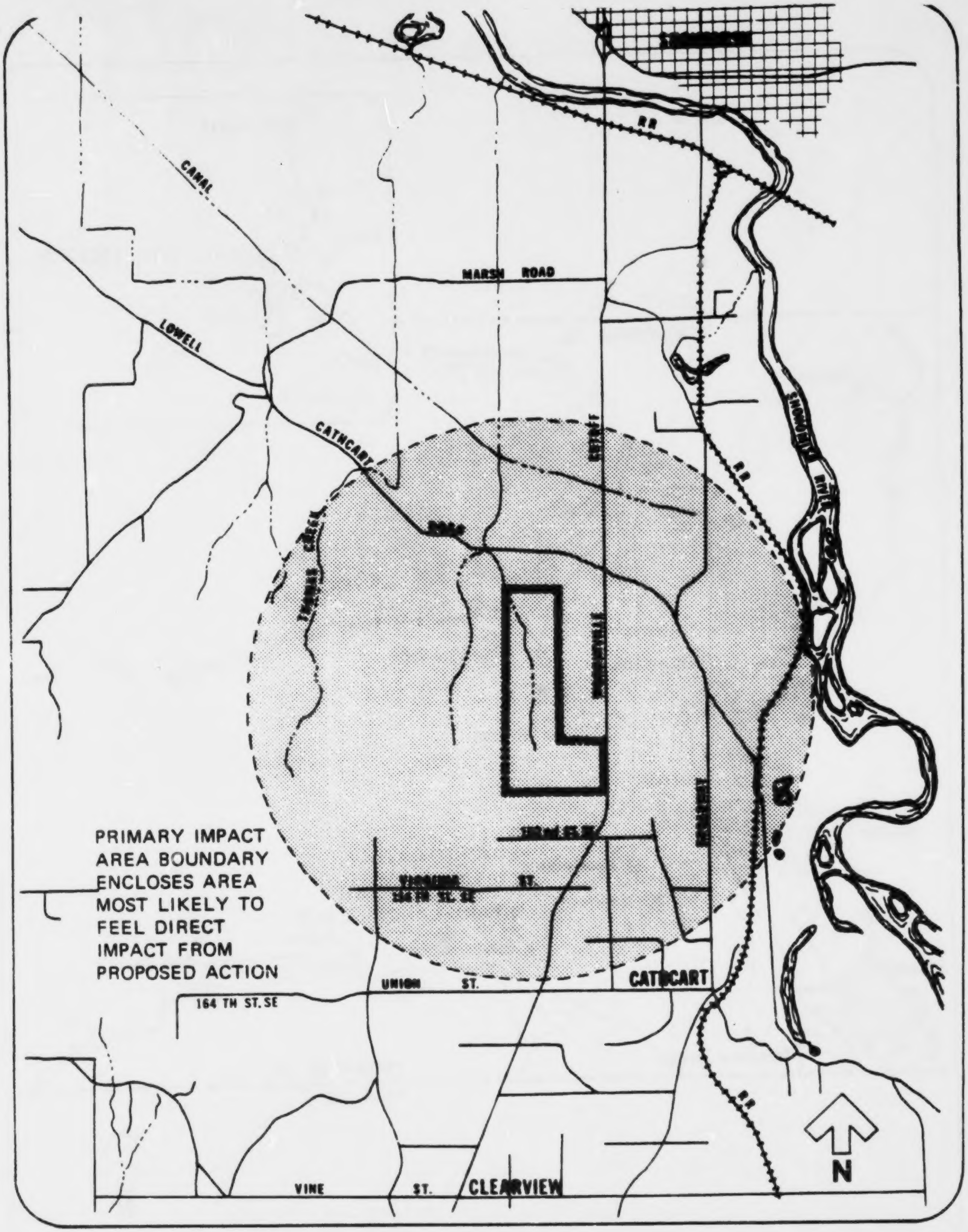
PRIMARY IMPACT AREA

Figure 1-2 shows the relationship of the Cathcart site within the primary impact area. Land within the boundary encompasses the areas which are most directly affected by the construction and operation of the sanitary landfill in the region. This does not imply that all areas within the designated impact area will be affected equally. Direct impact will vary depending on natural conditions (e.g. topography, drainage) and man-made conditions (e.g. location of residences, noise, traffic) within the area. The primary impact


BELLINGHAM
I-5
EVERETT
SITE LOCATION
9
2
SEATTLE
I-90
SKAGIT CO.
SNOHOMISH CO.
NORTH FORK STILLAGUAMISH R.
Stanwood
Arlington
SOUTH FORK STILLAGUAMISH RIVER
Granite Falls
Marysville
Lake Stevens
Everett
Mukilteo
Snohomish
PROPOSED CATHCART SANITARY LANDFILL SITE
Sultan
Monroe
Gold Bar
SNOHOMISH RIVER
Edmonds
Lynnwood
Mountlake Terrace
SNOHOMISH CO.
KING CO.
N

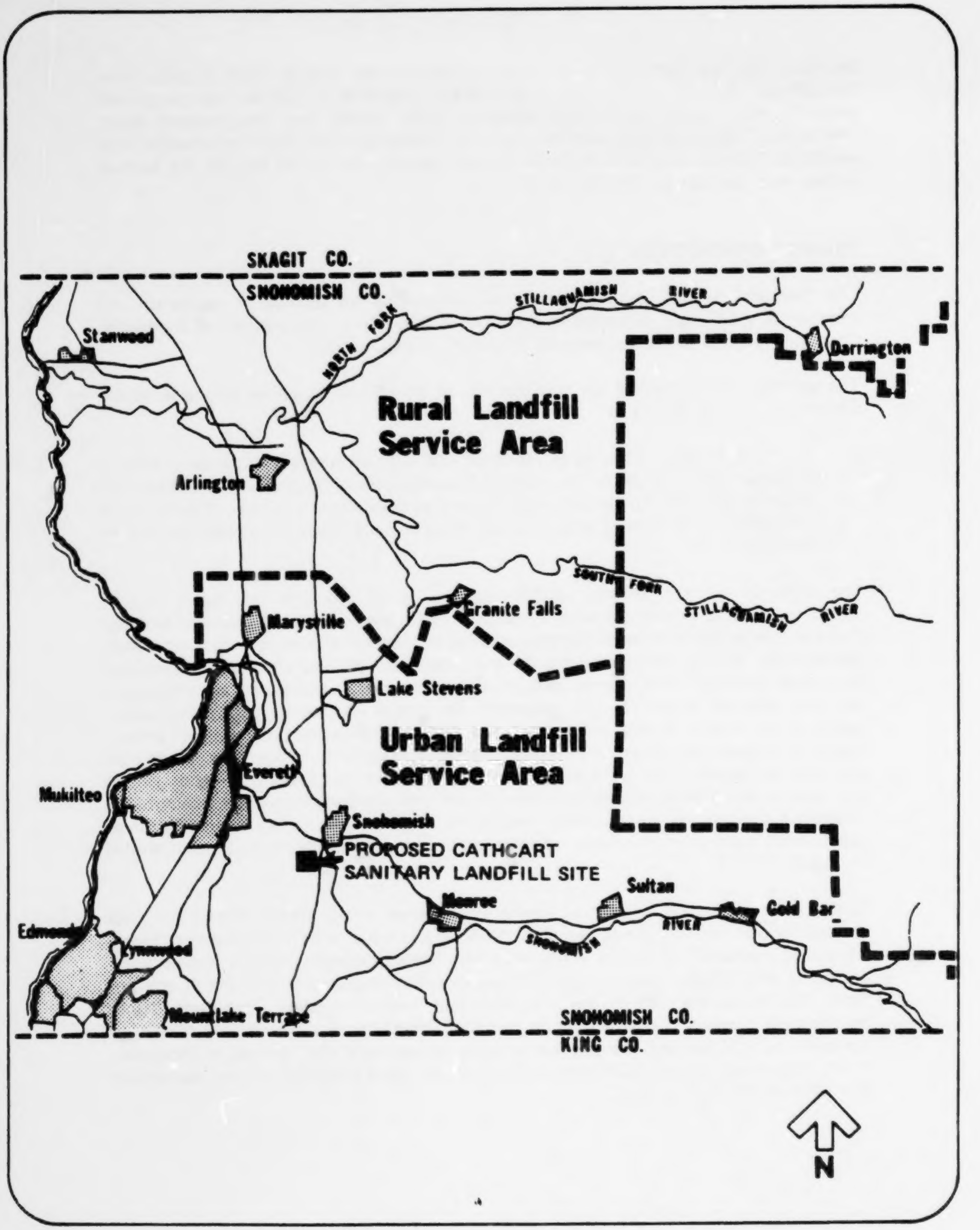
SITE LOCATION & VICINITY

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-1


RR
CANAL
MARSH ROAD
LOWELL
CATHCART
ROAD
THOMAS CREEK
STREET
SNOHOMISH RIVER
RR
PRIMARY IMPACT
AREA BOUNDARY
ENCLOSES AREA
MOST LIKELY TO
FEEL DIRECT
IMPACT FROM
PROPOSED ACTION
VIRGINIA ST.
ST. SE
UNION ST.
164 TH ST. SE
CATHCART
RR
N
VINE ST.
CLEARVIEW

PRIMARY IMPACT AREA

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-2


SKAGIT CO.
SNOHOMISH CO.
STILLAGUAMISH RIVER
NORTH FORK
Stanwood
Darrington
Rural Landfill Service Area
Arlington
SOUTH FORK STILLAGUAMISH RIVER
Granite Falls
Marysville
Lake Stevens
Urban Landfill Service Area
Everett
Mukilteo
Snohomish
PROPOSED CATHCART SANITARY LANDFILL SITE
Sultan
Monroe
Gold Bar
SNOHOMISH RIVER
Edmonds
Lynnwood
Mountlake Terrace
SNOHOMISH CO.
KING CO.
N

SERVICE AREA

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-3

boundary line represents a line drawn approximately one mile or more in radius from the Cathcart Sanitary Landfill site. This distance is assumed to include most people and property which would feel varying degrees of direct impact from the proposed action. This same distance was also used as a guide to disseminate and solicit information from residents. Indirect impacts both beneficial and negative will be felt beyond the primary impact area throughout the county.

PROJECT DESCRIPTION

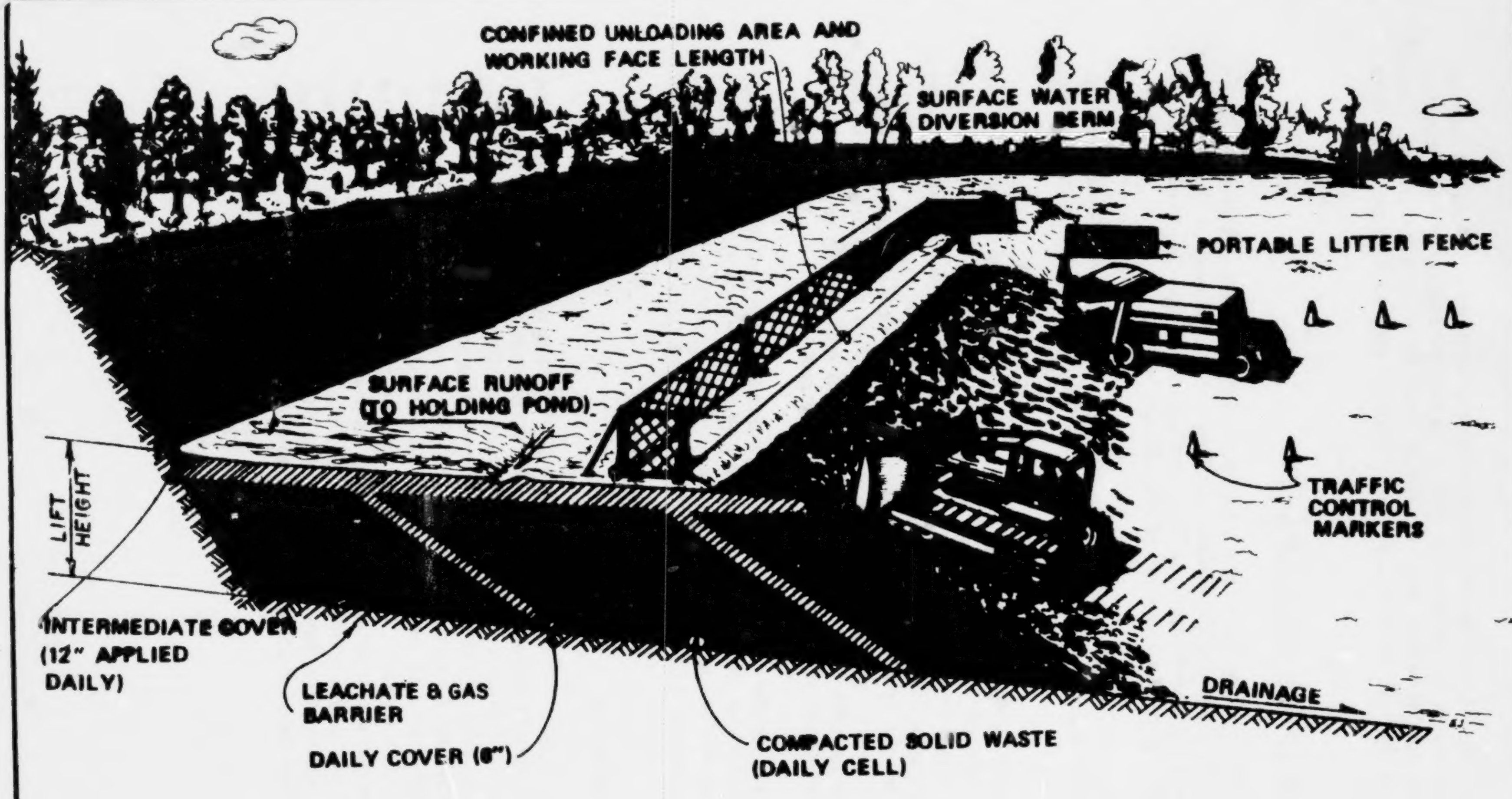
The Cathcart site will be utilized as a sanitary landfill for disposal of residential and commercial solid waste generated in the urban and southern rural portions of Snohomish County. The area served by the site is shown in Figure 1-3.

The sanitary landfill method for land disposal of solid waste is defined by the American Society of Civil Engineers as:

> "A method of disposing of refuse on land without creating nuisances or hazards to public health or safety, by utilizing the principles of engineering to confine the refuse to the smallest practical volume, and to cover it with a layer of earth at the conclusion of each day's operation, or at such more frequent intervals as may be necessary."

The objective of the sanitary landfill method is to eliminate the public health, environmental and aesthetic problems associated with open dumps and modified landfills. The site is selected after careful consideration of its location relative to community needs (accessibility, zoning, haul routes, site life and future use), physical characteristics required for a good operation (soils, geology, groundwater, surfacewater, topography and vegetation) and the potential impact on site neighbors. By proper engineering design and careful operation, a sanitary landfill will prevent surface and groundwater pollution, will prevent migration of gases into potentially hazardous areas, and will control odors, feeding animals and wildlife, rodents, flies, windblown litter, dust and other nuisances. Burning of garbage and trash is not allowed and landfill construction and operating procedures minimize the chances and spreading of accidental fires. Many of these controls are achieved through constructing daily cells of compacted solid waste and the daily earth cover as illustrated in Figure 1-4.

Buffer strips of natural or planted vegetation, planned on-site traffic routing and stage development of the landfill site minimize the noise and visual impacts on neighbors. Heavy equipment operating on the site is equipped with noise suppressant devices. The vehicular unloading and landfill operations are limited to a confined area on the site at any one time. This keeps the rest of the site clean and free of nuisance conditions. Staged development prevents overall vegetation removal. Vegetation is removed only from areas currently being filled and revegetation is begun immediately after an area is completely filled. This retains the maximum amount of buffer for visual protection and reduces erosion and dust problems.


CONFINED UNLOADING AREA AND
WORKING FACE LENGTH
SURFACE WATER
DIVERSION BERM
PORTABLE LITTER FENCE
SURFACE RUNOFF
(TO HOLDING POND)
LIFT
HEIGHT
TRAFFIC
CONTROL
MARKERS
INTERMEDIATE COVER
(12" APPLIED
DAILY)
LEACHATE & GAS
BARRIER
DAILY COVER (6")
COMPACTED SOLID WASTE
(DAILY CELL)
DRAINAGE

METHOD OF SANITARY LANDFILLING

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-4

A sanitary landfill has a future use plan that identifies the necessary elevations and contours required for future uses, the methods for closing the site and maintenance and operation of environmental control features after the site is closed for solid waste disposal. Some future uses of landfill sites are open space and recreation areas such as parks, ball fields and golf courses.

PROPOSED USE OF THE CATHCART SITE

The sanitary landfill must be operated in accordance with the proposed Snohomish Health District Regulations Governing Solid Waste Handling and the Washington Department of Ecology Minimum Functional Standards Governing Solid Waste Handling (WAC 173-301). These regulations define the operation of the sanitary landfill.

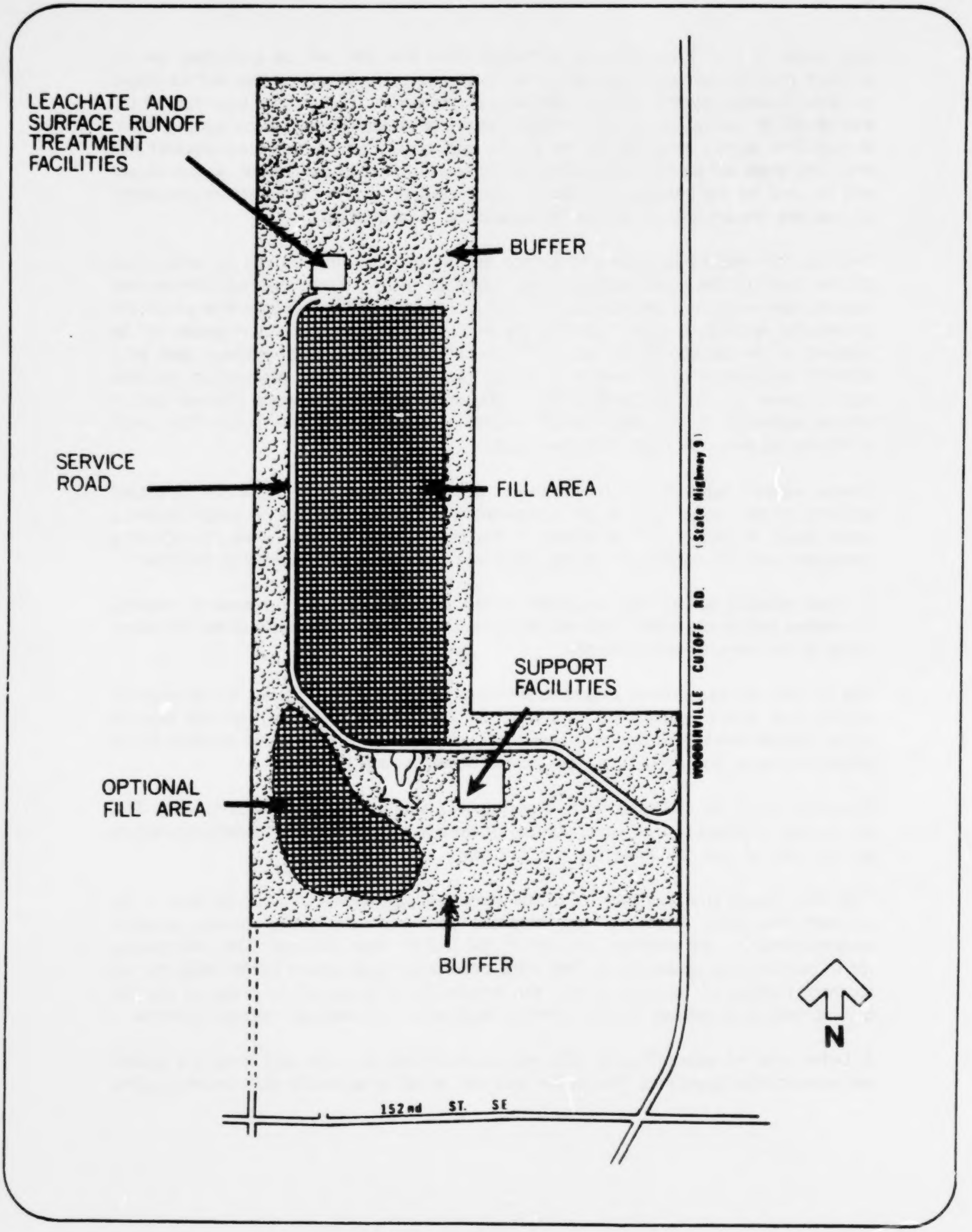
Hazardous wastes will not be accepted at the site and small public vehicles (automobiles and pickup trucks) will not be allowed to enter the site, to reduce the traffic impact in the neighborhood.

Development of the sanitary landfill is not viewed as a final solution to the waste disposal needs of Snohomish County. The county is actively involved in the study of recycling as well as other waste processing systems through the efforts of the Snohomish County Solid Waste Management Steering Committee. For this reason, one of the major design criteria utilized for the landfill is that the facility must be flexible to allow it to become part of any solid waste management system developed in the near future. Initial site development will be kept to a minimum to achieve this goal, leaving as much of the site in an undisturbed condition as is possible at any one time.

The proposed Cathcart site will be developed in three phases. The first phase will include preparing the site for the operation of a sanitary landfill and will consist of constructing necessary facilities and performing initial site clearing and excavation. The second phase will consist of operating a sanitary landfill at the site. The third and final phase will include preparing the site for future use.

Phase I — Site Separation

The initial phase of development at the 200-acre Cathcart site will include preparing the site for the operation of the sanitary landfill. An access road will be constructed from the Woodinville Cutoff Road SR9 as shown in Figure 1-5. The intermittent creek, which flows through the center of the site, will be diverted to an open channel which will be located near the western boundary of the site. The channel will be constructed of natural earth where possible, but will be lined with rock in areas where the stream velocity may be sufficient to create erosion. The channel will contain storage ponds at the southern point of the diversion and at periodic points along the channel to ensure that stormwater runoff flows will not create flooding downstream of the site. An area of approximately 8.3 acres at the northen boundary of the fill area will be cleared of vegetation and then excavated an average depth of approximately 20 feet to the relatively impervious sandstone


LEACHATE AND
SURFACE RUNOFF
TREATMENT
FACILITIES
BUFFER
SERVICE
ROAD
FILL AREA
WOODINVILLE CUTOFF RD. (State Highway 9)
SUPPORT
FACILITIES
OPTIONAL
FILL AREA
BUFFER
N
152nd ST. SE

SITE LAYOUT

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-5

layer under the fill area. The soil excavated from this area will be stockpiled for use as cover material during the sanitary landfill operation. The excavated area will be sloped to allow drainage towards a perforated pipe placed across the northern boundary of the excavation for collection of any leachate (rainwater contaminated by percolating down through the wastes) generated by the fill. Surface runoff from outside the excavated area and filled areas will be diverted around the fill area to the drainage channel. A soils sealant will be used on the bottom and sides of the excavated area to further assure prevention of leachate movement out of the fill area prior to collection.

Facilities for treating leachate and surface runoff from the fill area will be constructed to the north of the waste disposal area. Leachate treatment facilities will include two lagoons, one which will provide aeration for biological treatment and another which will provide for settling of solids following the aeration process. An irrigation system will be installed at the settling lagoon to enable the effluent waters to be sprayed back onto specially prepared areas of the site for further treatment by land or evaporation. Another settling basin will also be constructed in the area north of the waste disposal area to remove sediments from surface runoff originating from the fill area before the runoff is monitored and discharged into the creek.

Several support facilities will be located at the site. A small scale house will be placed adjacent to the access road in the southeastern portion of the site to weigh incoming waste loads. A facility will be placed in the same general area to serve the operating personnel and will contain an office, employee lunchroom and sanitation facilities.

A truck washing facility will be placed in the same general area for external cleaning of vehicles that dump waste. This will assure that litter and mud are not spread on public roads as the vehicles leave the site.

The fill area will be buffered around its perimeter as indicated in Figure 1-5. The majority of the north 40-acre portion of the site will be left in its natural state. This will separate waste disposal areas from the bluff portion of the site and will also buffer planned future developments to the north (e.g., the 132nd Street extension).

The majority of the southeast 40-acre portion will also be reserved as a buffer area. This will protect Highway 9 from visual contact of the site and will also keep landfill operations to the west of the hill along the east boundary.

The most critical site boundary, from the standpoint of noise and visual contact, is the southern boundary. Therefore, the proposed action, at this time, reserves potential developments for the southern portion of the site for later approval. This will provide for a monitoring program during first stage operations to document buffer needs for the southern portion of the site. It will also provide for a review of the status of the site development with respect to the potential application of resource recovery systems.

A buffer area of approximately 200 feet in width will be developed along the eastern and western site boundaries. This buffer area will be left in its natural state where possible, but will include an additional planting of trees in areas of sparse vegetation. A perimeter fence will be installed around the fill area as a safety barrier and as an animal control device.

Phase II – Operation of the Cathcart Sanitary Landfill

Solid waste will be transported to the sanitary landfill in refuse collection vehicles and in large trucks transporting containers from the urban and rural transfer stations. The Cathcart site will be open on a five-day week basis, with the possibility of operations required for one weekend day if waste loadings at transfer stations demand. Private automobiles and light trucks will not be permitted to dump refuse at the site, thus limiting overall traffic to and from the site. The estimated daily waste loads entering the landfill over the next ten years are listed in Table 1-1.

Table 1-1

Daily Solid Waste Loads

Year	Average *(tons/day)*	Average Weekend Day *(tons/day)*
1975	580	150
1980	640	170
1985	700	190

The waste disposal operation will take place in the 55 acre fill area designated in Figure 1-5. The fill area will be developed in six stages. The first stage (approximately 8.3 acres) at the northern end of the fill area will be cleared, excavated and prepared for receiving the solid wastes as part of the initial site development phase. In turn, each stage will be filled to an elevation that limits vehicle access or to the final elevations and contours while the next stage is being cleared, excavated and prepared. As each stage is completed to final elevation, it will receive additional final earth cover, final grading for drainage purposes, gas control and seeding with grass. Excavated earth will be used as daily cover or stockpiled for future use. Stumps, brush and trees from the clearing operation will be burned according to prevailing open burning regulations or disposed of by sale or chipping.

The amount of time required to complete the 55-acre fill area to the final elevations and contours is estimated to be 8 to 10 years with forecasted waste loads as shown in Table 1-1. Increased landfill life would occur if future waste recovery efforts reduced the waste load, if the optional fill area were used or if the 55-acre fill area were filled to higher elevations. A site life beyond 20 years is highly unlikely in any case.

The sanitary landfill will be developed by constructing compacted cells of the daily waste volume and covering the waste cells with compacted earth during the daily operation or at the end of each day. The uncovered working face or waste unloading area will be confined to a length of 150 feet and will be enclosed along three sides by portable litter fences.

The equipment necessary to accomplish daily landfilling operations will initially include a crawler dozer, a landfill compactor, an elevating scraper and a water truck. Other equipment may periodically be used for land clearing and excavation.

The compacted layer of earth around each cell of waste will reduce the amount of rainfall that infiltrates into the fill, prevent accidental fires from spreading through the fill, keep rodents, wildlife and other animals from feeding on the wastes, prevent flies from emerging from the wastes, reduce windblown litter and reduce odors. Gravel filled trenches will be constructed between each completed cell to allow lateral movement of gases (produced during the decomposition process) to a collection system around the perimeter of the fill area for burning or dissipation into the atmosphere. Gas barriers will be provided to prevent gases from moving laterally beyond the fill area.

A maintenance program will be established to collect any litter which may blow away from the daily operation area. Water will be used in the daily operation area as required in dry weather to control dust. Excavation cuts and earth stockpiles left exposed over seasons of heavy rainfall will be covered as required to reduce erosion and the amount of sediments delivered to the on-site runoff holding pond.

As each stage of the landfill area is completed to final elevations, a final cover of earth will be applied to the top and sides of the fill area. The final cover will consist of 6 inches of topsoil, over 1.5 feet of on-site soils, over 1 foot of selected on-site soils (least pervious soils compacted to near optimum density) for a total of 3 feet minimum earth cover over the solid waste. The topsoil will be planted with grass. Other plantings such as trees and shrubs will require special preparation at each location to extend the soil materials beyond the root zones.

A special final cover will be applied to approximately 5 acres of the first and second stages of fill development to provide an area suitable for land purification of the effluent from the leachate treatment facility. The total thickness of earth over the solid waste will be approximately five feet consisting of 2 feet of moderately pervious topsoil and on-site soil, over 2 feet of very pervious soils, and over 1 foot of impervious soil. The area will be planted with grass. Effluent from the leachate treatment facility will be sprayed on the specially prepared area by lower case sprinklers. The land purified effluent will be collected at the downhill end of the area and discharged into the on-site runoff holding pond.

Water quality in the holding pond will be periodically monitored to prevent pollution of the diverted creek which will receive the holding pond overflow. If leachate production begins before the first and second stages of the fill are completed, a temporary land purification site will be established near the southern end of the 55-acre fill area within the boundaries of the on-site runoff collection system.

Environment Control Features

On-Site Surface Runoff

The fill area drains to the north. Surface runoff from previously filled areas and from cleared and excavated areas will be collected and discharged into the on-site runoff holding pond at the north end of the site. The collection system will consist of sealed drainpipe to carry runoff through the filled area plus open ditches to collect and carry runoff around the toe of the filled areas. Overflow from the holding pond will be discharged into the existing creek.

Off-Site Surface Runoff

Surface runoff from the south and west will be intercepted by the creek diversion. Surface runoff from the east will be insignificant and will be handled as on-site runoff.

Off-Site Groundwater

Groundwater flowing from the south and west will be intercepted by the creek diversion. Groundwater from the east will be insignificant and will be handled as leachate.

Leachate

The relatively impervious sandstone along the bottom of the fill and relatively impervious soils around the sides of the fill will act as barriers to prevent migration of leachate and gases out of the fill area. A soils sealant will be applied to these soils for additional assurance of impermeability. The leachate, thus contained within the fill, will be drained to the north and collected in perforated pipes and piped to the leachate treatment facility. Pretreatment will be accomplished in an aerated lagoon followed by a settling pond which also provides for storage during rainy weather. Final treatment will be provided by pumping the pretreatment effluent to a specially prepared sprinkler application site. The pretreatment effluent will be sprayed on a different section of land each day where it will infiltrate into the soil and travel laterally under the surface to be collected and discharged into the on-site runoff holding pond for dilution prior to final discharge into the diverted creek.

Gas

Gas controls will be constructed as part of the daily landfill operations. Lateral venting of each daily cell will allow gases from waste decomposition to move laterally to the east side of the fill area where they will be vented vertically and collected in headers for burning or dissipation into the atmosphere as appropriate. The nearly impervious top cover on the fill and the nearly impervious bottom and sides will act as barriers to prevent gas movement out of the fill area except only through the controlled venting system.

Monitoring

Air quality will be monitored to determine if a piped collection system is required for gas control. Water quality will be monitored in the creek (above and below the fill area), in the on-site runoff holding pond, and in groundwater monitoring wells outside the fill area to prevent pollution of the diverted creek and pollution of groundwater.

Phase III – Future Use

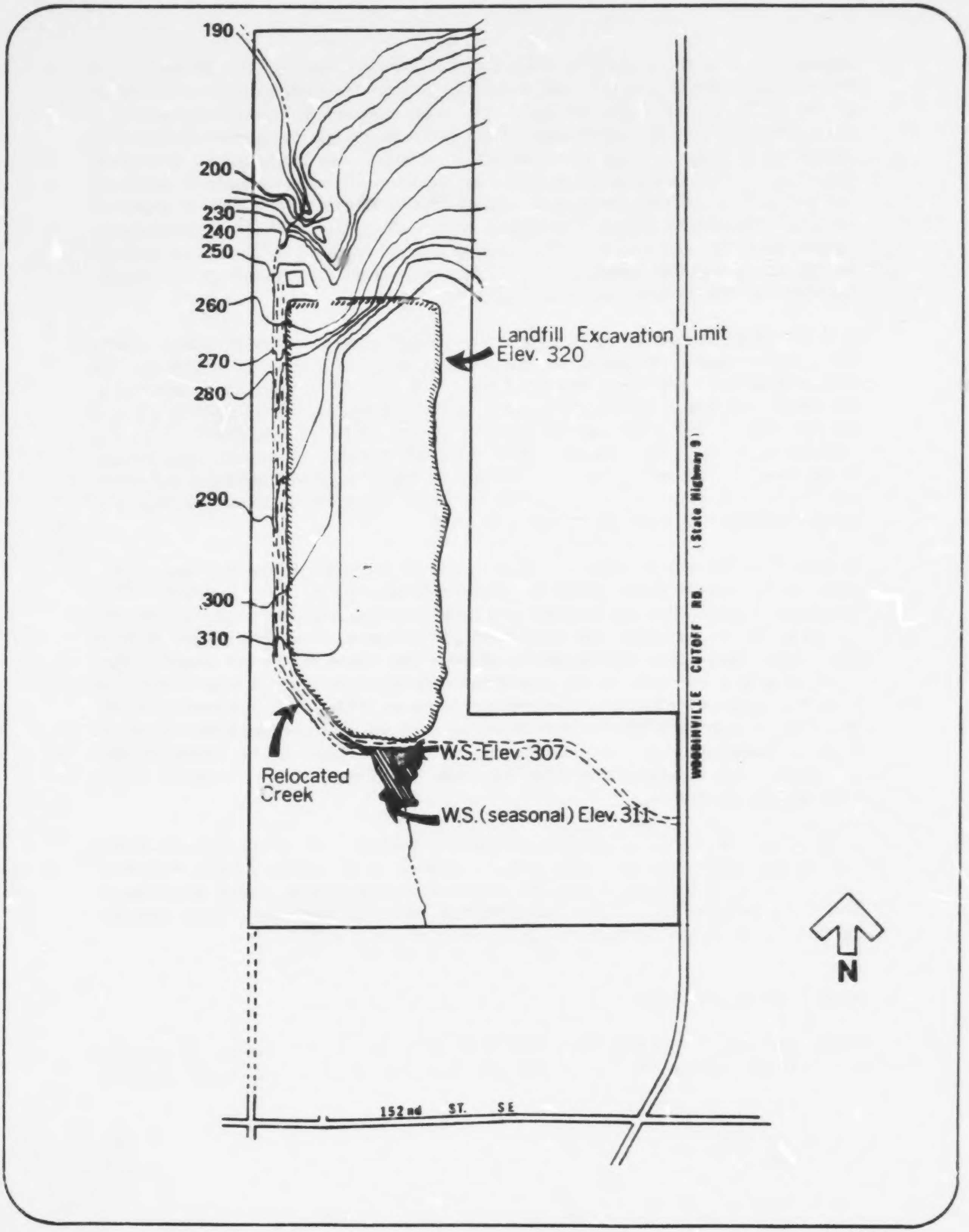
Future use of the 200 acre Cathcart site is presently unknown. However, the final elevations and contours (refer to Figure 1-6) have been selected to provide large gently sloped areas suitable for developing active recreation facilities (such as tennis courts, ball parks, soccer fields, archery range, golf course and bicycle pathways) and/or passive recreation facilities (such as parks, picnic areas, gardens, walkways or open space). As only 55 to 65 acres of the site would be filled with solid waste, considerable area will be suitable for structures. Large areas will be left in their natural condition. The holding ponds and the diverted creek could be developed to enhance the visual aesthetics of the site. The paved, double lane service road will provide vehicle access to much of the site.

After the fill areas have been closed and landfilling of solid waste ceases, these will be maintained by filling any resulting depressions with earth, grading to maintain drainage, and reseeding. The gas controls, leachate treatment facility and on-site runoff holding pond will be maintained and operated until they are no longer required. Monitoring of gas, surface waters in the creek, groundwater and water in the surface runoff holding pond would continue to be done by Snohomish Health District until the results indicate that environmental controls are no longer required.

HISTORICAL BACKGROUND

Shortly after the closure in 1967 of a major garbage dump site in southwest Snohomish County, officials of the county and its municipalities requested a comprehensive study of the county's solid waste management problems. In response to this request, the Snohomish County Solid Waste Steering Committee was organized in 1968 to find means of initiating a county-wide solid waste program. One of the early actions of the committee was to request the County Planning Department to investigate potential sources of funding to undertake a county-wide solid waste study.

In 1969, the Snohomish County Planning Department submitted a request to the Department of Housing and Urban Development for a grant under the Urban Systems Engineering Demonstration Program. This grant was approved and resulted in the


190
200
230
240
250
260
270
280
290
300
310
Landfill Excavation Limit
Elev. 320
WOODINVILLE CUTOFF RD. (State Highway 9)
W.S. Elev. 307
Relocated Creek
W.S.(seasonal) Elev. 311
152nd ST. SE
N

FINAL SITE CONTOURS

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-6

organization of a urban systems study program jointly funded by the Department of Housing and Urban Development and Snohomish County. The study included an evaluation of the county's solid waste problems. The study resulted in the development of a computer-aided planning methodology to aid in the solid waste management planning for Snohomish County. Utilizing the methodology, a study was conducted by Snohomish County to analyze alternative solutions for the county's solid waste management problems. The results of this analysis were presented in the ***Interim Report - Solid Waste Management Planning - Snohomish County, Washington,*** completed in May, 1971. The ***Interim Report*** recommended that Snohomish County develop a major landfill site "as soon as possible" and recommended five potential sites for further analysis for location of the facility. Cathcart was one of these potential five sites.

In April, 1972, Snohomish County applied to the U.S. Environmental Protection Agency for a solid waste demonstration grant for funding assistance to implement the recommendations made in the ***Interim Report.*** In March, 1973, a grant was awarded to the county for use in developing a proper sanitary landfill facility to serve as a model for the region. This grant was accepted in August, 1973 by the Board of County Commissioners, Snohomish County. While the grant provided for only a small portion of the financing required to implement the ***Interim Report*** recommendations, it committed the County to develop a land disposal facility which would utilize proper techniques of design, construction, maintenance and operation.

In May, 1973, Snohomish County initiated a program to implement the recommendations made in the ***Interim Report*** under the conditions specified by the U.S. Environmental Protection Agency. The county selected a Solid Waste Coordinator in the Department of Public Works to direct the implementation program. The Solid Waste Steering Committee, made up of representatives of cities and towns within the county, began functioning as a coordinating and information dissemination body. A design study was initiated to analyze the potential sites selected for the landfill facility in the ***Interim Report,*** and a public information/citizen involvement program was incorporated within the design study. In addition to the sites recommended for further analysis in the ***Interim Report,*** the design study evaluated additional sites that conformed to the locational criteria developed in the report.

In November, 1973, the design study completed the analysis, evaluation, and preliminary engineering studies of the alternative sites for location of the sanitary landfill. This study concluded that, on the basis of economic and environmental criteria, the proposed sanitary landfill site addressed in this Draft Environmental Impact Statement was the best available location for a sanitary landfill.

PUBLIC PARTICIPATION

Public participation regarding the overall Solid Waste Management System has occurred on two levels - official input from cities and towns has been obtained through the Solid

Waste Management Steering Committee and through presentations to various city councils. Direct communication with the general public has occurred through the press, interest group presentations, brochures, informational mailings and through individual contacts in person or by telephone.

SOLID WASTE MANAGEMENT STEERING COMMITTEE

In 1967, solid waste disposal was recognized as a serious problem in Snohomish County. The Snohomish Health District Board directed its staff to contact city officials and county representatives and other interested parties for the purpose of studying ways and means of bringing about a county-wide solid waste management program for Snohomish County. The first meeting with a group naming itself "The Snohomish County Solid Waste Disposal Steering Committee" was held in January of 1968. Since that time and through the present, that group, now calling itself "Snohomish County Solid Waste Management Steering Committee," has met to coordinate solutions to serious solid waste disposal problems.

In February of 1969, the Snohomish County Planning Department presented to the Steering Committee a new approach for funding a solid waste study under a federal grant called WASH-USE-1. In that same year the Steering Committee endorsed the study to be made by the Planning Department.

The resulting Interim Report On Solid Waste Management Planning For Snohomish County was published in 1971. In September of that year, the Steering Committee reviewed the Interim Plan and submitted its recommendations to the Snohomish County Commissioners. It is on the basis of these recommendations that the County Commissioners have proceeded to implement the basic recommendations of the 1971 study.

As implementation has proceeded, the Steering Committee has met to review various details with repsect to the financing and operation of the county-wide solid waste management system. The Steering Committee has passed a formal resolution supporting the Solid Waste Management Plan as proposed and supporting the selection of the Cathcart landfill site as the primary landfill for Snohomish County.

COMMUNICATION THROUGH THE MEDIA

Heavy media coverage of the project has taken place since late 1972. The Solid Waste Division files contain approximately 70 press clippings, dated from November 21, 1972 through April 25, 1974, relating directly to the implementation project.

The fact that the Cathcart area was under consideration as a landfill site location first appeared in the press in September of 1973. Its selection as the best site, after detailed engineering studies, was announced to the press in December of 1973.

GENERAL CITIZEN INPUT

As a part of the WASH-USE-1 study effort in 1971, Systems Control, Inc. distributed a questionnaire to a selected sample population. Nearly 200 responses were received. Overall program priorities and practices have been guided by this response.

In November of 1973 the Department of Public Works distributed a questionnaire as a newspaper advertisement. Although only 20 responses were received, the general trend of thought approximated that evidenced in the earlier survey.

A number of individual meetings, discussions and phone calls have also served to obtain general citizen input. These have included conversations with the general public, interest group representatives and individuals from the Cathcart area.

INPUT OF CATHCART RESIDENTS

Preliminary engineering studies, concluded in December of 1973, indicated that the Cathcart site was the most favorable of those examined by the county. At that time, an informational brochure was mailed to residents of the area to announce this finding and to announce that more detailed studies were under way. Initially, this brochure did not generate a significant level of response.

On January 10, 1974, these residents were informed of a county public meeting for a discussion of this subject. Prior to this meeting, a group of residents presented a petition to the Board of County Commissioners in opposition to the proposed site. The petition contained approximately 360 signatures representing approximately 320 households. The planned public meeting was held on January 23, 1974 at the Cathcart Elementary School. It was attended by about 150 people, most of whom voiced strong opposition to the proposed site. Most present viewed the meeting as a public protest meeting. Concerns voiced included land values, traffic, water pollution, noise and aesthetics.

In May of 1974, additional information materials were mailed to area residents and to petition signators. A series of meetings with area residents is planned to follow this mailing, to better inform the community of the true nature of the planned project.

PROPOSED METHOD OF FINANCING

An internal staff report, titled "Alternative Solid Waste Management Organizational Structures and Funding Schemes," was prepared in April of 1972 to assist in the selection of a method of financing for the county-wide solid waste management system. From this report, several alternative systems were evaluated by the Solid Waste Management Steering Committee.

As approved by the Steering Committee, operating expenses and amortized capital outlay will be recovered through user fees collected at the landfill sites and transfer stations. The overall financing method, as developed in a draft Interlocal Agreement for Snohomish County Solid Waste Management Program, is as follows:

> . . . The basic method of financing for the county-wide solid waste management system shall be the user fee method, whereby each user of the solid waste management facilities . . . shall pay for each individual use of the facilities.

This method of financing will apply to the operation of the Cathcart Sanitary Landfill.

In accordance with Chapter 2.68 of the Snohomish County Code, the Snohomish County Department of Public Works is the sponsor and responsible agency for this project. Therefore, the Department will prepare an annual budget for all capital and operating expenditures related to the solid waste management program and to the development and operation of facilities resulting therefrom. For 1974, the Board of Snohomish County Commissioners appropriated $1,568,950 from the Snohomish County General Fund for solid waste capital outlays.

RELATIONSHIP WITH LAWS, POLICIES AND PLANS

State Solid Waste Management Act of 1969

The State Solid Waste Management Act of 1969 (RCW 70.95) required each county to prepare a comprehensive solid waste management plan. The plan was to develop a program for eventual compliance with the Department of Ecology Minimum Functional Standards Governing Solid Waste Handling (WAC 173-301).

The effort that resulted in the *Interim Report*, a short-range plan addressing critical, short-term disposal problems, started prior to the passage of the Act. After passage of the act, the WASH-USE-1 program was developed so that its solid waste portion would form the basis for the development of a plan to conform with the act's requirements.

A small supplementary grant for the final plan report writing was awarded to the county in April of 1974. Data developed during the entire planning/implementation effort has received the constant review and approval of the Solid Waste Management Steering Committee. The proposed action is in accordance with the overall planning effort, and would achieve compliance with WAC 173-301 for a major portion of the solid wastes generated within Snohomish County.

Snohomish Health District Regulations Governing Solid Waste Handling

In accordance with RCW 70.95.160, the Snohomish Health District has prepared a proposed ordinance governing solid waste handling. The ordinance, if adopted, will be somewhat more restrictive than the state standards promulgated under WAC 173-301. The proposed action would comply with the proposed standards, if adopted.

Snohomish County's Hillman Area Comprehensive Land Use Plan

Snohomish County's Hillman Area Comprehensive Land Use Plan was adopted by the Board of County Commissioners in 1964. The plan designates the ultimate use of the project site and the general surrounding area. This plan is further discussed in the section on land use in Chapter 2 - Existing Conditions.

Lake Stevens/Snohomish Area Comprehensive Land Use Plan

The Lake Stevens/Snohomish Area Comprehensive Land Use Plan was adopted by the Board of County Commissioners in 1964. The plan affects land north of the project site extending north of the Ree's Corner (intersection between SR-9 and Lowell-Cathcart Road).

Puget Sound Governmental Conference's Interim Regional Development Plan (IRDP)

The Puget Sound Governmental Conference's Interim Regional Development Plan is at the regional level and has a significant influence upon the project site and its environment.

The Snohomish County Transportation Study

The Snohomish County Transportation Study was adopted by the Board of County Commissioners in 1972. This study contains a Recommended Improvement Program for the county highway system for both the 1972-1977 and 1978-1990 time frames.

Water and Sewer District Plans

Water and Sewer District Plans, pertinent to the impact area, include the following:

- o WASH-USE-1 Sewer, Water, Solid Waste and Storm Drainage Studies
- o Farmers Home Administration Sewer and Water Study
- o Cross Valley Water Association Plans
- o Fircrest Sewer District Plans
- o Fircrest Water District Plans

CHAPTER 2

EXISTING CONDITIONS

NATURAL ENVIRONMENT

Climate

The climate in southwest Snohomish County is characterized by mild, moist winters and cool, dry summers and frequent wind. Three United States Weather Bureau stations are located within an eight mile radius of the Cathcart site. One is at Paine Field, near Everett, another in the City of Snohomish, and the third is in the City of Bothell.

Daytime temperatures above 80' are not uncommon during the summer months, but the nights are generally cool. Highest recorded temperatures near the Cathcart site are in the range of 90' to 100'F. By using data reported for the three nearby weather stations, the following temperature averages and extremes (Table 2-1) are estimated to be representative of the Cathcart site:

Table 2-1

Temperature Averages and Extremes *(Degrees Fahrenheit)*

	January	July
Average Maximum	44.1	73.9
Average Minimum	32.3	51.1
Mean	38.2	62.0
Lowest	1	39
Highest	68	96

Relative humidities are generally lower during the summer months and higher during the winter months. Fog occurs frequently in the morning hours during fall, winter and spring. Periods of subfreezing temperatures occur occasionally during the winter months, sometimes accompanied by snowfall. Freezing temperatures may occur between the end of October into the month of April. Moderate temperature fluctuations sometimes occur when polar air masses invade the area or when such masses are displaced by warm maritime air masses.

Precipitation at the Cathcart site can be estimated by comparing the precipitation reported at the surrounding weather stations with allowance given to the effects of local topography. This results in an estimated average annual precipitation of about 43 inches ranging from a low of 24 inches to a high of 50 inches. The distribution of precipitation can be characterized by greater monthly accumulations occurring during the winter months with the summer months being the time of lowest accumulations. The greatest 24 hour precipitation amount recorded within the vicinity was 2.80 inches at Bothell, Washington.

The average seasonal snowfall for the Cathcart site is approximately 15 inches. Snowfall is usually confined to the period of December through February. Ground accumulations may last from one day to about ten days before melting.

Average wind velocities generally range from 4 to 12 miles per hour and are predominantly from the SE or SSE during the winter months and from the N or NNW during the summer months. Maximum wind velocities occasionally exceed 25 miles per hour. Peak gusts within the vicinity have been measured up to 72 miles per hour.

Evaporation and transpiration are difficult to measure and are subject to wide seasonal and regional fluctuations. Evapotranspiration is related to differences in vapor pressure, air and water temperatures, wind, atmospheric pressures, humidity, quality of water and types of foliage.

Evapotranspiration rates have been estimated for a number of areas in the Puget Sound Region by the Puget Sound Task Force - Pacific Northwest River Basins Commission. These estimates were published in ***Puget Sound and Adjacent Waters Study*** - Appendix III, in 1970. For an area with an average annual precipitation rate of approximately 40 inches, annual evaportranspiration was estimated to equal approximately 26 inches. Net evapotranspiration was estimated to occur on the average from early May to late September.

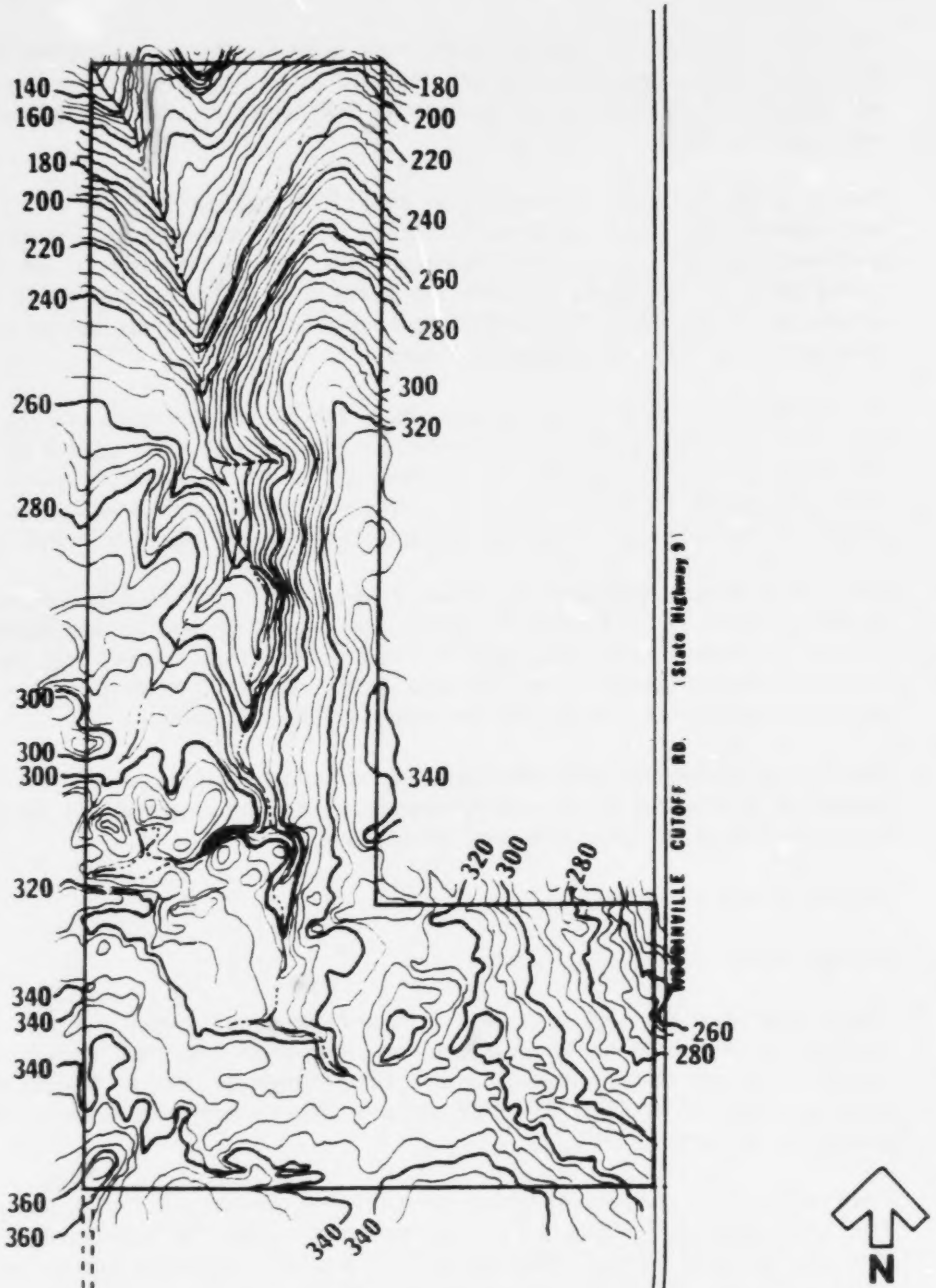
Topography

The Cathcart site is approximately 200 acres in size and is located on a sloping bench of land above the wide Snohomish River Valley. The valley floor below the site varies in elevation between 5 and 20 feet above Mean Sea Level (MSL). The land at the valley's edge rises sharply towards the south into the northerly portion of the site. Cathcart site elevations vary north to south respectively, from about 130 feet above MSL to 360 feet above MSL as shown in Figure 2-1. (Additional topographic features of the surrounding area are shown in Figure 2-5). The western portion of the site lies in a gradually sloping gully (2%) between two ridges. The southeastern 40 acre portion of the site slopes moderately (5%) from the eastern ridge down toward Highway SR-9.

The western 160 acre portion of the site is naturally drained by two intermittent streams entering the property from the south and west and leaving the property on the north.

Geology and Soils

The geology and soils of the Cathcart site were studied by the firm of Geolabs-Washington, Inc., Soil Mechanics and Foundation Engineers. A summary of their findings is presented below.


140
160
180
200
220
240
260
280
300
300
300
320
340
340
340
360
360
180
200
220
240
260
280
300
320
340
320
300
280
260
280
340
340
WOODINVILLE CUTOFF RD. (State Highway 9)
152nd ST. SE
N

TOPOGRAPHY

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-1

The site is underlain at various depths from several inches up to 50 feet by a soft to moderately hard, gray, silty sandstone reported to be of the Oligocene Age (before the last glaciation), and may be on the order of 500 feet thick. Beneath this sandstone are older basaltic rocks.

Overlying the sandstone, atop the high ground of the site, is glacial till. This material was deposited by glacial ice some 13,000 to 15,000 years ago, as the glacier traveled southward through the area. In the western and southern portion of the site, fine to coarse sands of the Esperance sands are found between the base of glacial till and the surface of the sandstone. The material represents the outwash sands, carried by meltwater streams issuing from the approaching glacier.

As the ice sheet melted away, streams from the ice face or remaining ice blocks left behind on the uplands, along with snow and rain, carved a draw through the till to bedrock. This draw running through the site has been partially filled with post glacial recessional sands and gravels. Localized kettles or potholes in the till surface exist near the western margin of the property. These contain silts and clays or peats and highly organic soil.

Soil profiles extending through the site are shown in Figure 2-2 and 2-3, with their locations keyed in Figure 2-4. The dense glacial till, the loose sands, and the weathered sandstone contain a relatively large percentage of fines. Soil analysis indicates that the glacial till contains about 45 percent fines, the loose sands contain 20 to 30 percent fines, and the weathered sandstones contain approximately 18 percent fines.

Test drilling and on-site water level observations indicate that the sandstone is only slightly permeable. The glacial till is a nearly impervious mixture of gravel, silt and sand which has been thoroughly compacted and consolidated.

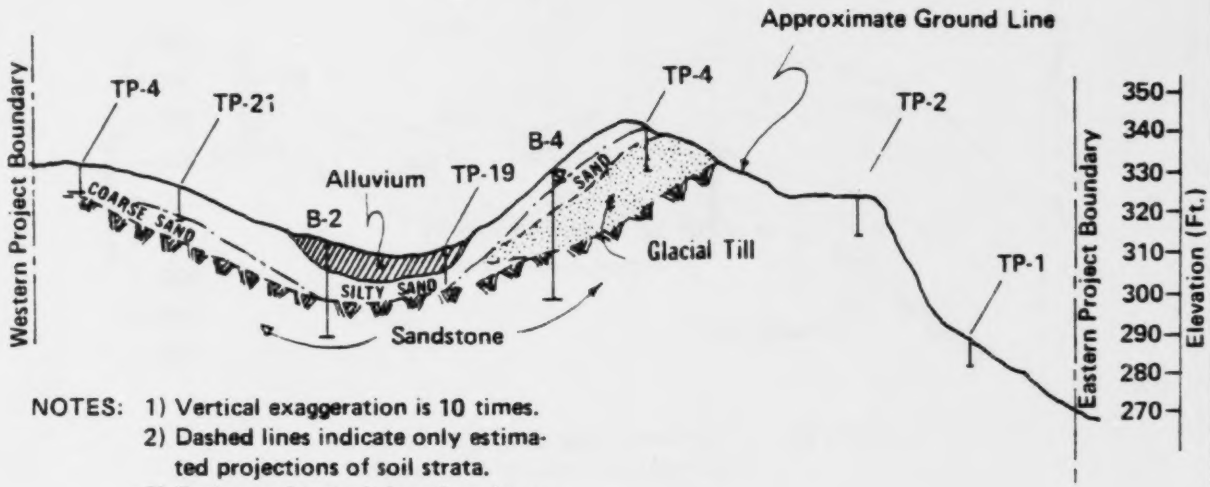
Hydrology and Drainage

Surface Water

The surface water drainage basin and drainage facilities are shown in Figure 2-5. Several drainage facilities have been constructed in conjunction with road construction. These include a 24-inch diameter culvert under 164th Street SE and an 18-inch and 24-inch diameter culvert under 152nd Street SE. An additional 18-inch culvert extends under 152nd Street SE adjacent to SR-9.

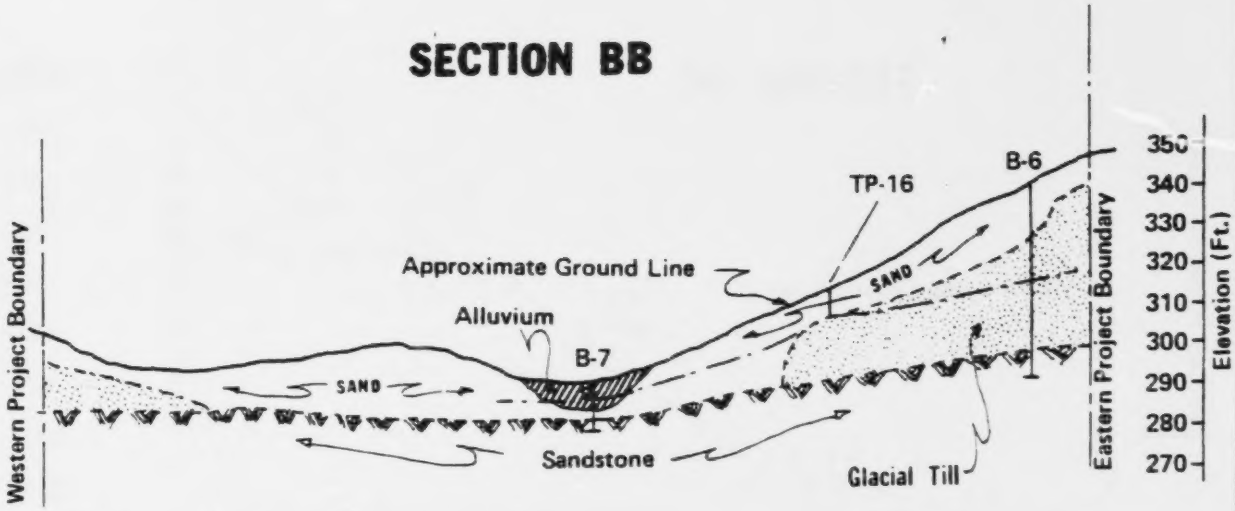
The northward flowing creeks which drain through the site join before leaving the site. This creek eventually enters a drainage canal crossing the flat Snohomish River Valley. It enters this canal through a 30-inch by 42-inch box culvert under Lowell-Cathcart Road which is located below the site at the base of the hill.

SECTION AA


Approximate Ground Line
TP-4
TP-21
TP-4
TP-2
B-4
Alluvium
TP-19
B-2
COARSE SAND
SAND
Glacial Till
SILTY SAND
Sandstone
TP-1
Western Project Boundary
Eastern Project Boundary
Elevation (Ft.)
350
340
330
320
310
300
290
280
270

NOTES:
1) Vertical exaggeration is 10 times.
2) Dashed lines indicate only estimated projections of soil strata.
3) Boring and test pit locations have
3 been projected to section line.
4) —·—- indicates piezometric surface.

SECTION BB

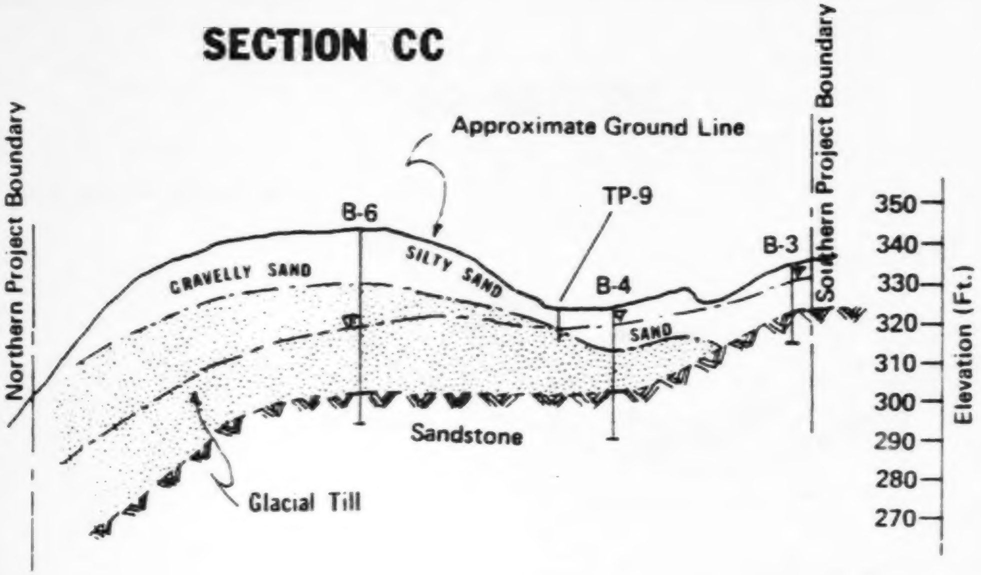

B-6
TP-16
Approximate Ground Line
SAND
Alluvium
B-7
SAND
Sandstone
Glacial Till
Western Project Boundary
Eastern Project Boundary
Elevation (Ft.)
350
340
330
320
310
300
290
280
270

NOTES:
1) Vertical exaggeration is 5 times.
2) Dashed lines indicate only estimated projections of soil strata.
3) Boring and test pit locations have been projected to section line.
4) —·—·-indicates piezometric surface.

EAST-WEST SOIL PROFILES

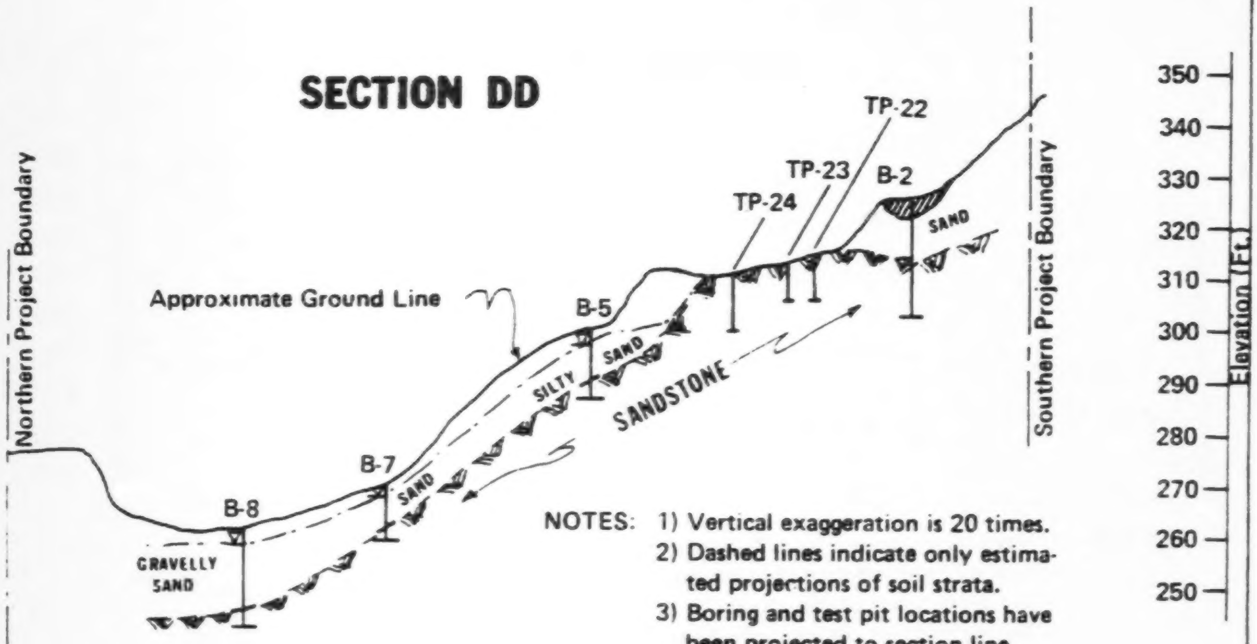
CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-2

SECTION CC


Northern Project Boundary
Approximate Ground Line
B-6
TP-9
B-3
B-4
Southern Project Boundary
GRAVELLY SAND
SILTY SAND
SAND
Sandstone
Glacial Till
350
340
330
320
310
300
290
280
270
Elevation (Ft.)

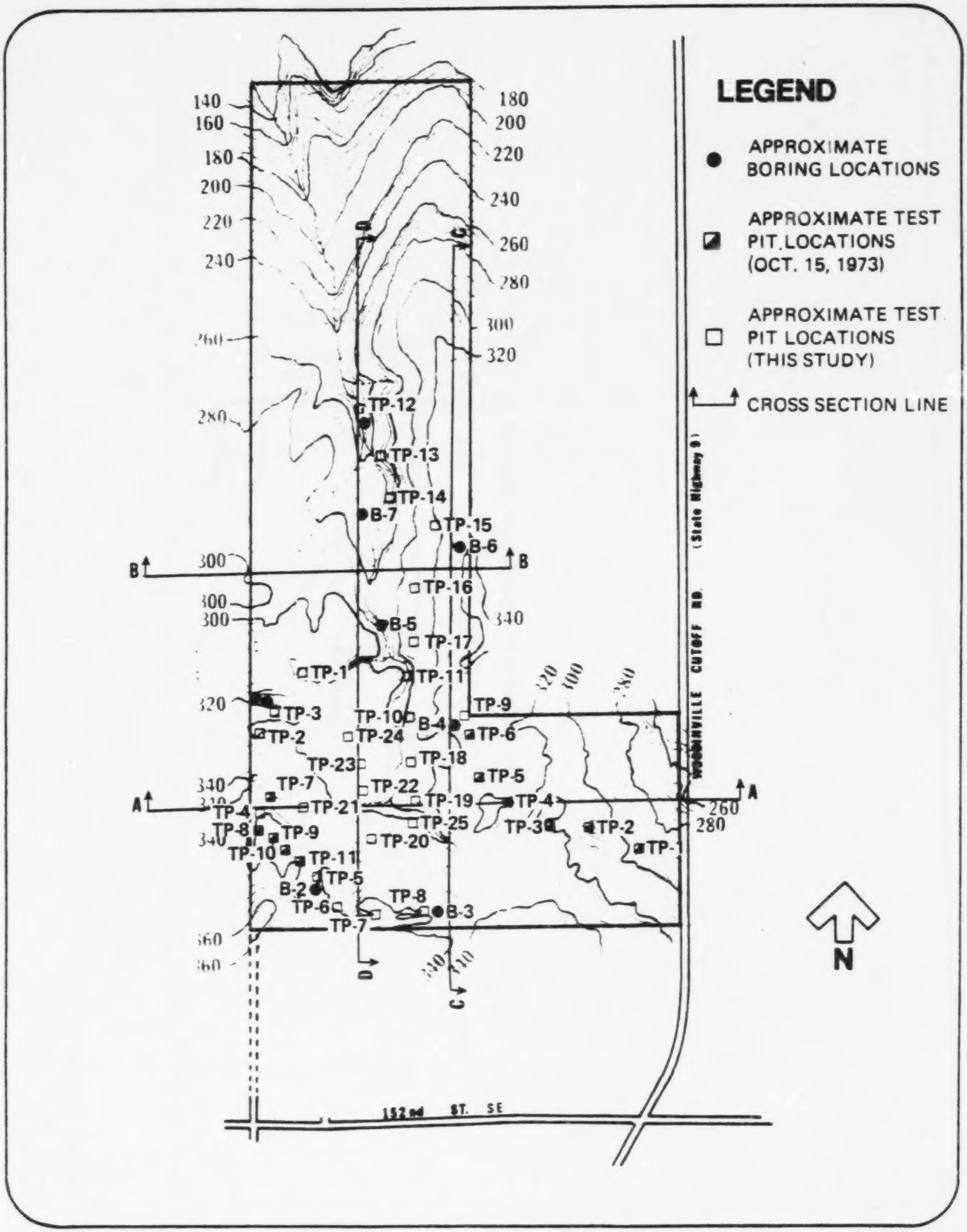
NOTES:
1) Vertical exaggeration is 20 times.
2) Dashed lines indicate only estimated projections of soil strata.
3) Boring and test pit locations have been projected to section line.
4) —·— indicates piezometric surface.

SECTION DD

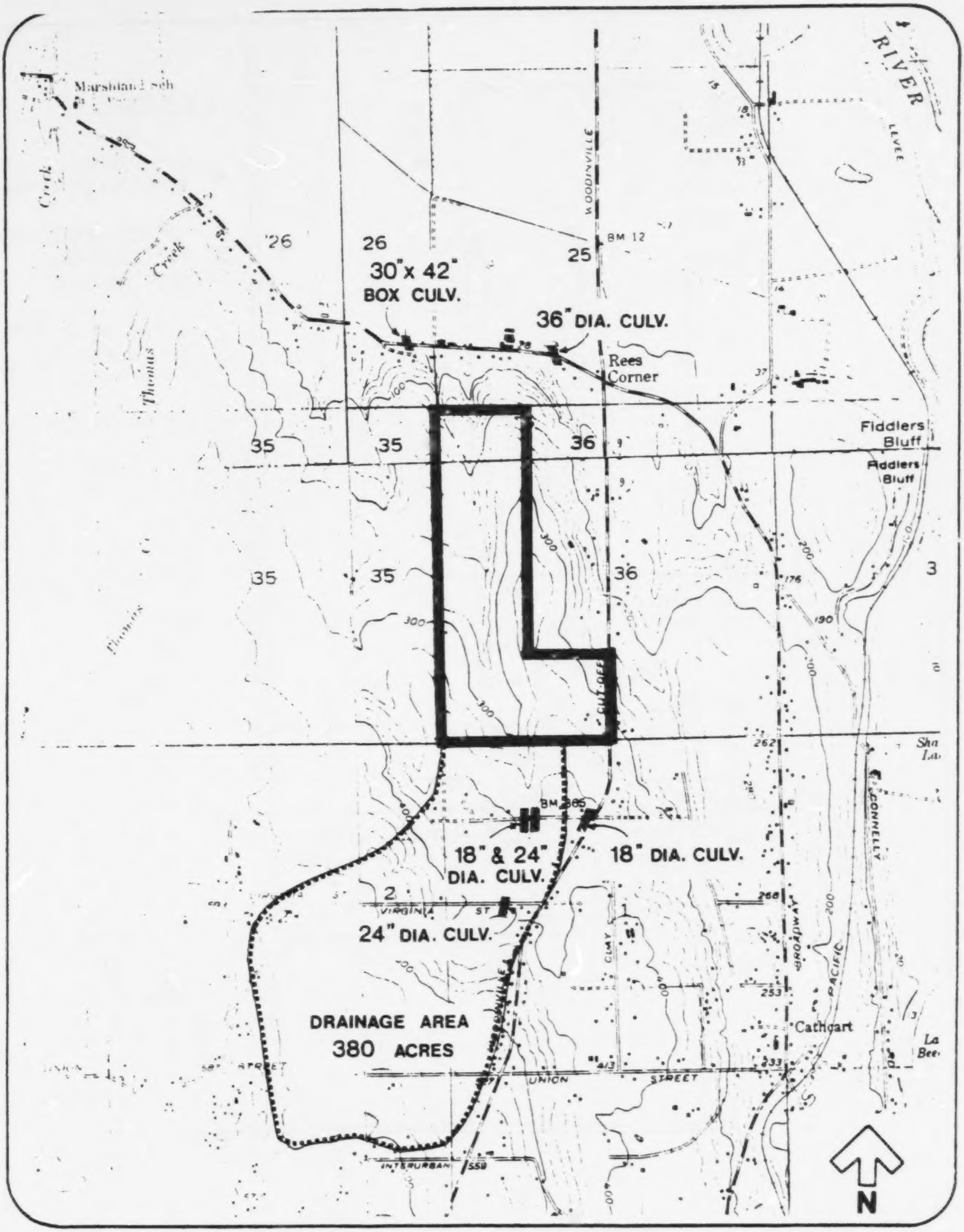

Northern Project Boundary
Approximate Ground Line
TP-22
TP-23
B-2
TP-24
B-5
B-7
B-8
GRAVELLY SAND
SAND
SILTY SAND
SANDSTONE
Southern Project Boundary
350
340
330
320
310
300
290
280
270
260
250
Elevation (Ft.)

NOTES:
1) Vertical exaggeration is 20 times.
2) Dashed lines indicate only estimated projections of soil strata.
3) Boring and test pit locations have been projected to section line.
4) —·— indicates piezometric surface.

NORTH-SOUTH SOIL PROFILES


LEGEND
● APPROXIMATE BORING LOCATIONS
◪ APPROXIMATE TEST PIT LOCATIONS (OCT. 15, 1973)
☐ APPROXIMATE TEST PIT LOCATIONS (THIS STUDY)
CROSS SECTION LINE
N
WOODINVILLE CUTOFF RD. (State Highway 9)
152nd ST. SE
A
A
B
B
C
C
D
D
B-2
B-3
B-4
B-5
B-6
B-7
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-9
TP-10
TP-11
TP-12
TP-13
TP-14
TP-15
TP-16
TP-17
TP-18
TP-19
TP-20
TP-21
TP-22
TP-23
TP-24
TP-25
140
160
180
200
220
240
260
280
300
320
340
360

SOIL PROFILE LOCATIONS


Marshland Sch
Creek
Creek
Thomas
Thomas
RIVER
LEVEE
WOODINVILLE
BM 12
26
26
25
30"x 42"
BOX CULV.
36" DIA. CULV.
Rees
Corner
Fiddlers
Bluff
Fiddlers
Bluff
35
35
36
35
35
36
3
300
300
300
200
190
176
200
CUT-OFF
262
BM 385
18" & 24"
DIA. CULV.
18" DIA. CULV.
2
VIRGINIA
ST
24" DIA. CULV.
CLAY
BROADWAY
PACIFIC
CONNELLY
268
253
Cathcart
DRAINAGE AREA
380 ACRES
STREET
UNION
STREET
233
INTERURBAN
N

SURFACE WATER DRAINAGE

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-5

Groundwater

Precipitation in the vicinity of the site is in excess of forty inches per year. This precipitation is incapable of penetrating into the till and sandstone in appreciable quantities because of the low permeability of the materials. Instead, water flows down slope to collect in various kettles and potholes, or into the two streams which cross the site. These two streams represent the surface of the perched groundwater table which is trapped atop the glacial till and sandstone.

Groundwater and surface water levels rise during the winter and spring to their highest levels and drop during the summer since net evapotranspiration occurs on the average from early May to late September. This creates a condition where virtually all rainfall entering the site during the winter flows directly off the site as surface runoff while during the late summer surface streams may become dry.

Wells in the immediate vicinity of the Cathcart site obtain water from perched sources atop the glacial till, from permeable lenses within the till, or from floodplain deposits of the Snohomish River Valley. Only one well is reported to obtain water from the basalt underlying the sandstone. This well is for the Cathcart School, and is located approximately one mile north of the site. It draws water from a fractured horizon about 140 to 150 feet below the surface. With some 500 feet of sandstone stratigraphically overlying the basalt, entry of leachate into this aquifier is unlikely.

Along the western boundary of the site, a thick layer of sand was encountered. This sand may be part of the surficial, weathered bedrock, or may be a portion of the Esperance sand formation. If these soils are part of the Esperance sands, they would represent the easternmost edge of a wedge shaped formation which extends for a considerable distance to the south and west, and is, in some areas, utilized as an aquifier to supply wells.

Ecological Community

A life zone possesses at least one major species of organism, and this organism whether plant or animal may be used to give title to the zone. The Cathcart site is located in the climatic climax Western Hemlock Life Zone ***(Tsuga Heterophylla).*** This life zone extends south from British Columbia through the Olympic Peninsula, coast ranges, Puget Trough and the Cascade mountain range. The life zone is identified by its wet, mild climate, its specific soil types and species of vegetation and wildlife. The climate is the prime factor for establishing the extent and location of the life zone because of its influence on the type of vegetation and wildlife inhabitating the area.

A life zone in its natural state, undisturbed by man's activities or major natural occurrences (fires, volcanos, etc.), will tend to be inhabited by a homogeneous community termed the climatic climax community. This community of vegetation and wildlife is that which has evolved naturally to a state of equilibrium. The Western Hemlock life zone is thus given its title due to its potential dominant climax species: Western Hemlock.

Very little of the Western Hemlock zone is presently in climax condition since the zone has been under heavy logging pressure and urbanization. When an area within a life zone is disturbed and the existing climatic climax community destroyed, it normally takes a period of time before the climatic climax community reestablishes itself if left in a natural state. During this time, the area will go through various transitional stages where it is inhabited by a succession of communities, each giving way to the next until the climatic climax community is established. These various communities which exist prior to the climatic climax are termed seral communities. The edaphic communities exist in small areas which are not typical of the total natural life zone. An example is a community inhabitating a swamp in an otherwise forested region due to peculiar drainage characteristics in that particular area. The Cathcart site and the immediately adjacent area has been divided into its seral, edaphic and man-affected subcategories, as shown in Figure 2-6. These subcategories are shown in Table 2-2. Additional detailed information is presented in Appendix B.

Table 2-2

Cathcart Site — Life Zone Subcategories

Symbol	Subcategories	Description
12	Mid-Successional	Shrub stage. Deciduous brush invades herbaceous cover at 4th or 5th year. It remains until overtopped by tree saplings, usually Douglas Fir.
12A	Mid-Successional	Late shrub early tree stage. Period when saplings are topping brush. Disturbance of the site is still evident and canopy closure is incomplete, 10 to 20 years after disturbance.
13	Sub Climax Conifer	Douglas Fir is the dominant tree species.
14	Sub Climax Conifer - Broadleaf	After some field work in the planning area, many areas were determined to be in this mixed state, especially in the lowland areas adjacent to urbanized areas. In these areas conifer plantings have not been extensive and there are many stands of mixed Douglas Fir, Hemlock, Broadleaf Maple, Alder and Western Red Cedar. These are natural successional growth areas that have not reached the climax stage yet.

Table 2-2 (Cont.)

Symbol	Subcategories	Description
24	Deciduous stands Broadleaf	Talus slopes with dominant Broadleaf Maple and Vine Maple, ***Acer Circinatum Querous,*** Oak, Alder groves: sub climax variant.
25	Ruderal (Agricultural)	Produce agriculture; orchard, cereal grains, etc.
26	Meadow	Prairies, pastures, golf courses, etc.
31	Developed	Urban areas
32	Bare earth	Gravel pits, grading, strip mining, etc.

Vegetation

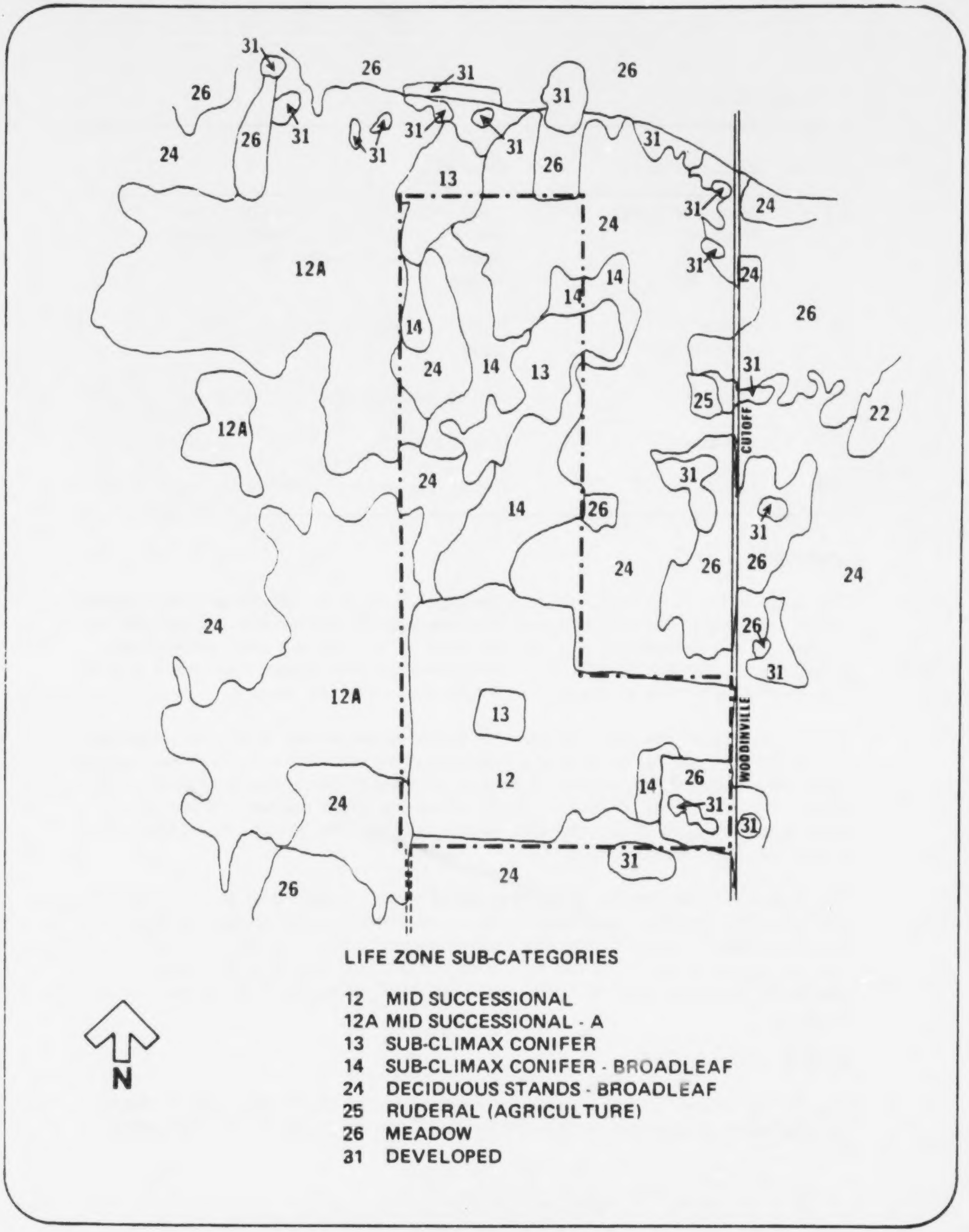
The southern leg of the Cathcart site is generally young brushy Red Alder ***(Alnus Rubra)*** with a few young scattered conifers dotting the area. the area has been logged twice and is third growth (subcategory 12). In the center of the area is a small patch of second growth conifers (mixed Douglas Fir, Western Hemlock and Western Red Cedar). A small pasture and farmhouse is located in the southeast corner of the site.

The northern leg of the site consists of a mixture of second growth forests that are between 40 and 70 years old. The majority of the deciduous trees in both the 14 and 24 subcategory type areas is Red Alder with an understory of Oregon Grape ***(Beriberis)*** in the higher areas. Very few big-leaf maples are found along the stream course. The conifers are a three species mixture of Douglas Fir, Western Hemlock and Western Red Cedar with a sword fern ***(Polysticum)*** understory.

The general surroundings of the site are second growth mixed forest to the W and SW, and the WNW. To the S and SSW is the typical developmental pattern of alternating disturbed pastures and yards and second growth forest. To the north are river valley pasture and agricultural lands. To the east are the Snohomish River and valley with some riparian vegetation, but mostly pasture. Farther east is another large section of mixed second growth forest.

Wildlife

The various wildlife species affected by development of the Cathcart site are itemized by vegetation subcategory in the species list found in Appendix B. The vegetation



LIFE ZONE SUB-CATEGORIES

12 MID SUCCESSIONAL
12A MID SUCCESSIONAL - A
13 SUB-CLIMAX CONIFER
14 SUB-CLIMAX CONIFER - BROADLEAF
24 DECIDUOUS STANDS - BROADLEAF
25 RUDERAL (AGRICULTURE)
26 MEADOW
31 DEVELOPED

ECOLOGICAL ZONES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-6

subcategory in conjunction with the wildlife species list can be viewed as an index to an ecological community. These communities, given some variance, should remain constant throughout the life zone.

Habitat for wildlife is essentially defined by vegetation. Selection of the vegetation life zone subcategories was done with due consideration to wildlife. As previously mentioned, a vegetation type in conjunction with a number of associated wildlife species together form a community. The site includes several overlapping communities which increases its species richness. Though the number of species is large, the total number of organisms is small compared to local or regional populations. The communities found on the site are common and typical of Puget Sound's rural developing areas. Wildlife species common to the various life zone subcategories utilize the area for residence. In other words, shelter is found, foods are secured and propagation of species results.

The site is not indicated on the "Zoological Elements" map of the Army Corps of Engineers, Environmental Reconnaissance Inventory of the State of Washington, 1973, for having unique zoological or wildlife attributes. There are no rare or endangered species known to utilize the site. There are no rare or critical habitats on the site.

Air Quality

There is no existing air quality data in the vicinity of the proposed landfill site. Any concentration of pollutants in the area is due primarily to human activity. Minor quantities of methane gas are emitted from the decay of vegetative matter on the heavily wooded site. It is expected that a low concentration of pollutants exists in the study area because of its low density rural characteristics and absence of heavily traveled arterials.

The Washington State Department of Ecology did acquire data on two of the primary vehicular pollutants, carbon monoxide and hydrocarbons, at a site in the center of Everett in 1971 and 1972. The values obtained were indicative of concentrations to be found in medium size urban areas. While the extremely low population density of the study area precludes extrapolation of Everett data for the proposed landfill site, it is interesting to note that the one hour standard for carbon monoxide was not exceeded during the 18 months of measurements in Everett. Hydrocarbon data obtained at Everett did not permit comparison to guidelines since they represented total hydrocarbons rather than non-methane hydrocarbons.

Scenic Values and Aesthetics

The combination of the natural features of the Snohomish River Valley and the backdrop of the Cascade mountain range provide the viewer with a positive aesthetic impression of the region. Man-made features in the immediate vicinity of the Cathcart site are low density rural use. The site itself consists of undeveloped land with the western 160 acres covered with fir and alder trees and low brush. The closest city to the site is Snohomish. Cathcart and Clearview are small commercial centers and do not interrupt the rural low density atmosphere of the area.

Historical and Archaeological Values

Approximately four miles north of the Cathcart site is the City of Snohomish. Snohomish has been nominated to be placed on the state register of historic places. Washington State's advisory council for historic preservation will consider taking action in the near future. The City has buildings that were constructed around the turn of the century. There are no known archaeological sites located on the Cathcart site or in the immediate region.

MAN-MADE ENVIRONMENT

Population and Employment

Population within an approximate one mile radius of the site is 900 persons. This figure is based on the latest population estimates from the Snohomish County Planning Department and an existing dwelling unit count. The density of an eight square mile area surrounding the Cathcart site was computed at 110 persons per square mile which approximates the overall density (102 persons per square mile) of the entire census tract in which it is located. This represents a density much lower than that of other census tracts in the unincorporated areas of southwest Snohomish County which average between 500 and 1,000 persons per square mile.

This low density coupled with the relatively high number of persons per household (3.55) tends to characterize the area as a rural, single family dwelling-unit residential area. In other population characteristics such as family income, education, race, age and sex composition, employment location and housing characteristics, the area's population is not significantly different from other residential areas of the county.

The population of this area is mainly employed in the metropolitan areas of Everett and Seattle as well as other areas of Snohomish County. At present, no commercial or industrial activity is located near the site.

The 1970 census shows 43 percent of the employees in this census tract to be employed in either King County or Seattle, 18 percent in Everett and 38 percent in the rest of Snohomish County. A mink farm located at the south boundary of the site is an example of the small scale farming operations prevalent in the area, to the south and east. Larger farms including both dairy and crop exist in the Snohomish River Valley to the north. Such farms are economically viable and represent a significant part of the Snohomish County agricultural industry.

The Clearview commercial district, located approximately two miles to the south, is the nearest shopping area. It serves the surrounding community by offering daily grocery needs and other convenience goods. Weekly grocery shopping and purchase of major items is done primarily in Snohomish and to a lesser extent in Bothell and Everett.

Community Structure

Community structure might best be described as "loose" for two reasons: first, no schools, parks or shopping facilities exist within the study area to provide a focus for community activity; second, it would appear that the low density coupled with the orientation of many residences to major arterials rather than neighborhood streets does not facilitate the development of strong neighborhood unity. The greatest unifying characteristic of the residents of this area is their common desire for the privacy and seclusion afforded by the rural atmosphere.

Land Use

Land use in the primary impact area can be summarized as predominantly Agricultural, Open Space and Rural Residential. The overall density of the study area is approximately one dwelling unit per 20 acres. The typical residential parcel of land in this area ranges between 3 and 10 acres in size. There are very few small suburban type lots.

The structures range in condition from totally dilapidated to very good with their ages ranging from over 50 years to quite recent construction. Many of the residences have accessory buildings on the site associated with minor agricultural activities. These structures range from fair to poor condition. Several mobile homes are located in the area, on individual large lots and are not particularly prevalent in certain areas.

New construction has been on a piecemeal basis rather than in large developments or platted subdivisions. No platting activity has taken place in this area in the past decade, with the exception of the Kenwanda development located nearly one mile to the east on the hill overlooking the Snohomish River. Also, short platting (the subdivision of land into four parcels or less) has been quite uncommon in this area, and those lots that have been created by short plats are generally one acre or more in size. Thus, the rural character has remained fairly stable throughout this area.

Relative to the proposed landfill site, very few residents are located within close proximity of the property lines. Three residences are located immediately adjacent to the south property line and overlook the eastern portion of the site. All other homes to the south and the east along Highway 9 are located more than 700 feet from the boundaries and are separated by dense stands of trees.

Residences to the north of the site are located along the Lowell-Cathcart Road and at least 1,000 feet from the north boundary lines; they are separated by dense woods and an elevation drop of approximately 160 feet. No residences exist within one mile of the western boundary of the site. No roads serve this area and presently it is heavily wooded.

A number of officially adopted public plans have a direct bearing on the present and future use of the land area in the vicinity of the proposed sanitary landfill site. The plan having the greatest influence on this area is ***Snohomish County's Hillman Area***

Comprehensive Land Use Plan which was adopted by the Board of County Commissioners in 1964. This plan designates the ultimate use of the project site and the general area surrounding it to be for low density residential development at densities ranging from two to four dwelling units per acre. This ultimate land use designation is shown in Figure 2-7. The plan text indicates that residential density should not exceed two dwelling units per acre in areas having slopes exceeding 13 percent. The plan also designates an area immediately southeast of the project boundary along SR-9 (the Woodinville Cutoff) as a suitable site for a neighborhood business center. Finally, the Hillman Area Plan indicates a large tract of land approximately one mile west of the project's western boundary as a potential regional county park site.

The ***Lake Stevens/Snohomish Area Comprehensive Land Use Plan*** adopted by the Board of County Commissioners in 1964 is the second county level plan which directly affects a portion of the area surrounding the project site. This area, which consists of the Snohomish Valley extending north from Rees Corner, has been designated by the plan as most suitable for intensive agricultural use. This ultimate land use designation is also shown in Figure 2-7.

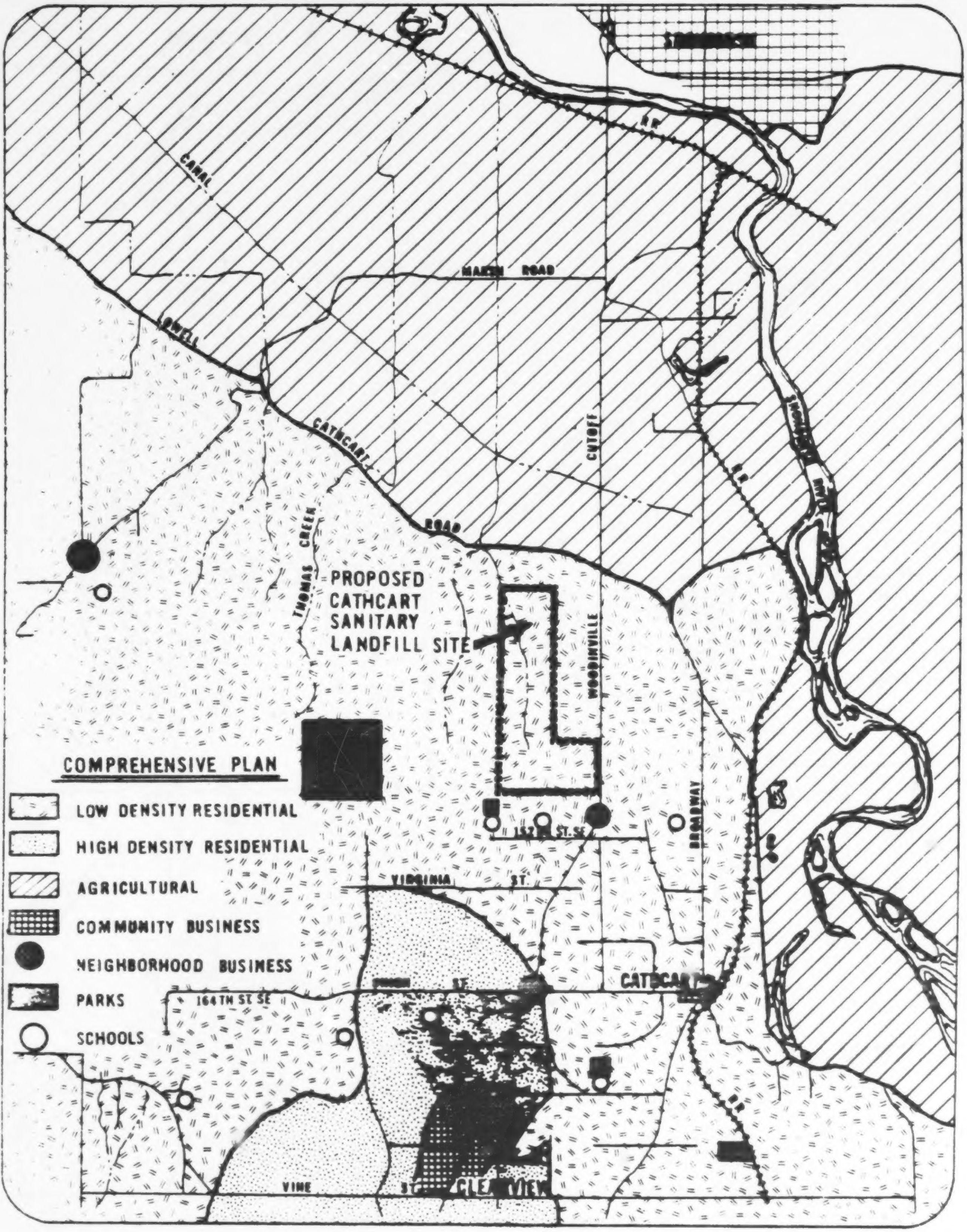
At the regional level, one plan in particular, the Puget Sound Governmental Conference's ***Interim Regional Development Plan*** (IRDP), has significant influence upon the project site and its environs. The IRDP map depicts the project site and a large area surrounding it remaining as open and rural areas of low density (residential development should not exceed two dwelling units per acre).

Zoning

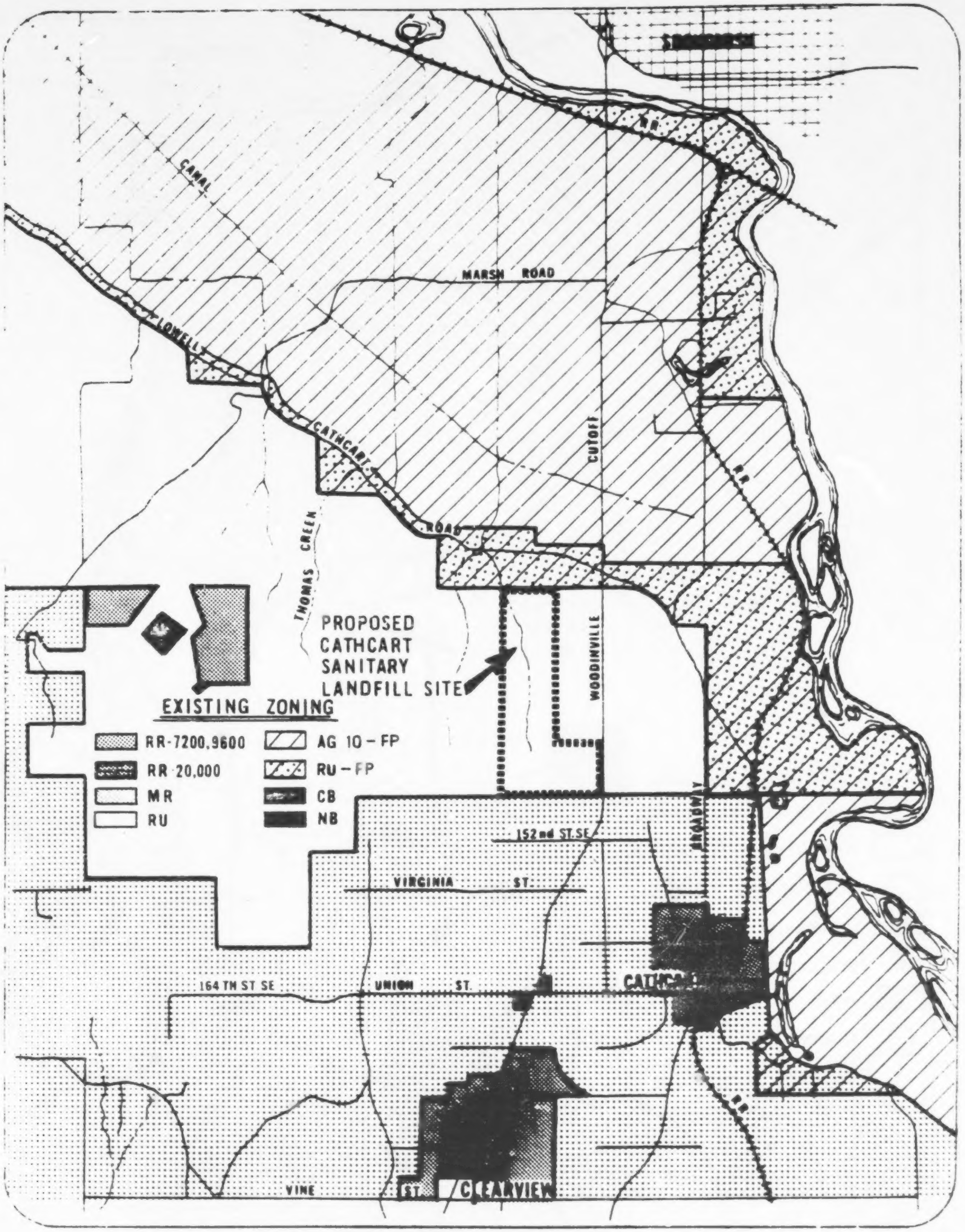
The present zoning is shown on Figure 2-8. The zoning of the site and the surrounding land to the north, east and west is all rural use. This is primarily an interim zoning classification permitting a wide range of residential, agricultural and related uses. As described in Section 18.64 of the Snohomish County Code, this zone is designated "to allow the minimum of controls in those portions of the county which are largely rural in character without detrimentally affecting the public health, safety and general welfare and without adversely affecting the general objectives and policies of the Comprehensive Plan."

In general, the Rural Use Zone is quite permissive in that it allows most of those uses allowed only as conditional uses in residential and agricultural zones, for example, duplexes, hospitals and commercial kennels. In addition, this zone permits mobile homes on individual lots of 1/2 acre or more. Those uses permitted with the Conditional Use Permit in Rural Use Zones include a much wider range of activities than other residential zones, for example, permanent circus establishments and amusement parks, drive-in theatres and sawmills.

The only other zone classification prevalent in the area is Rural Residential 20,000. The purpose of this zone as described in the Snohomish County Code "is to provide low


CANAL
R.R.
LOWELL
CATHCART ROAD
THOMAS CREEK
CUTOFF
R.R.
PROPOSED CATHCART SANITARY LANDFILL SITE
WOODINVILLE
COMPREHENSIVE PLAN
LOW DENSITY RESIDENTIAL
HIGH DENSITY RESIDENTIAL
AGRICULTURAL
COMMUNITY BUSINESS
NEIGHBORHOOD BUSINESS
PARKS
SCHOOLS
152ND ST. SE
BROADWAY
VIRGINIA ST.
164TH ST. SE
CATHCART
VINE ST.
CLEARVIEW
R.R.

ULTIMATE LAND USE DESIGNATION


CANAL
MARSH ROAD
LOWELL
CATHCART
ROAD
CUTOFF
RR
THOMAS CREEK
PROPOSED CATHCART SANITARY LANDFILL SITE
WOODINVILLE
EXISTING ZONING
RR-7200,9600
RR 20,000
MR
RU
AG 10-FP
RU-FP
CB
NB
BROADWAY
152nd ST.SE
VIRGINIA ST.
164 TH ST SE
UNION ST.
CATHCART
RR
VINE ST.
CLEARVIEW

EXISTING ZONING

ATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT - FIGURE 2-8 density development in outlying areas or where soil or topography require larger lot size." Generally, this zone allows for residential uses on a 1/2 acre minimum lot size. However, it is more permissive than other rural residential zones in the county in that, like the Rural Use Zone, it permits mobile homes on individual lots of 20,000 square feet or more.

As with all other rural residential zones, it permits as conditional uses such things as sanitary landfills, golf courses, public utilities, schools and churches.

Circulation

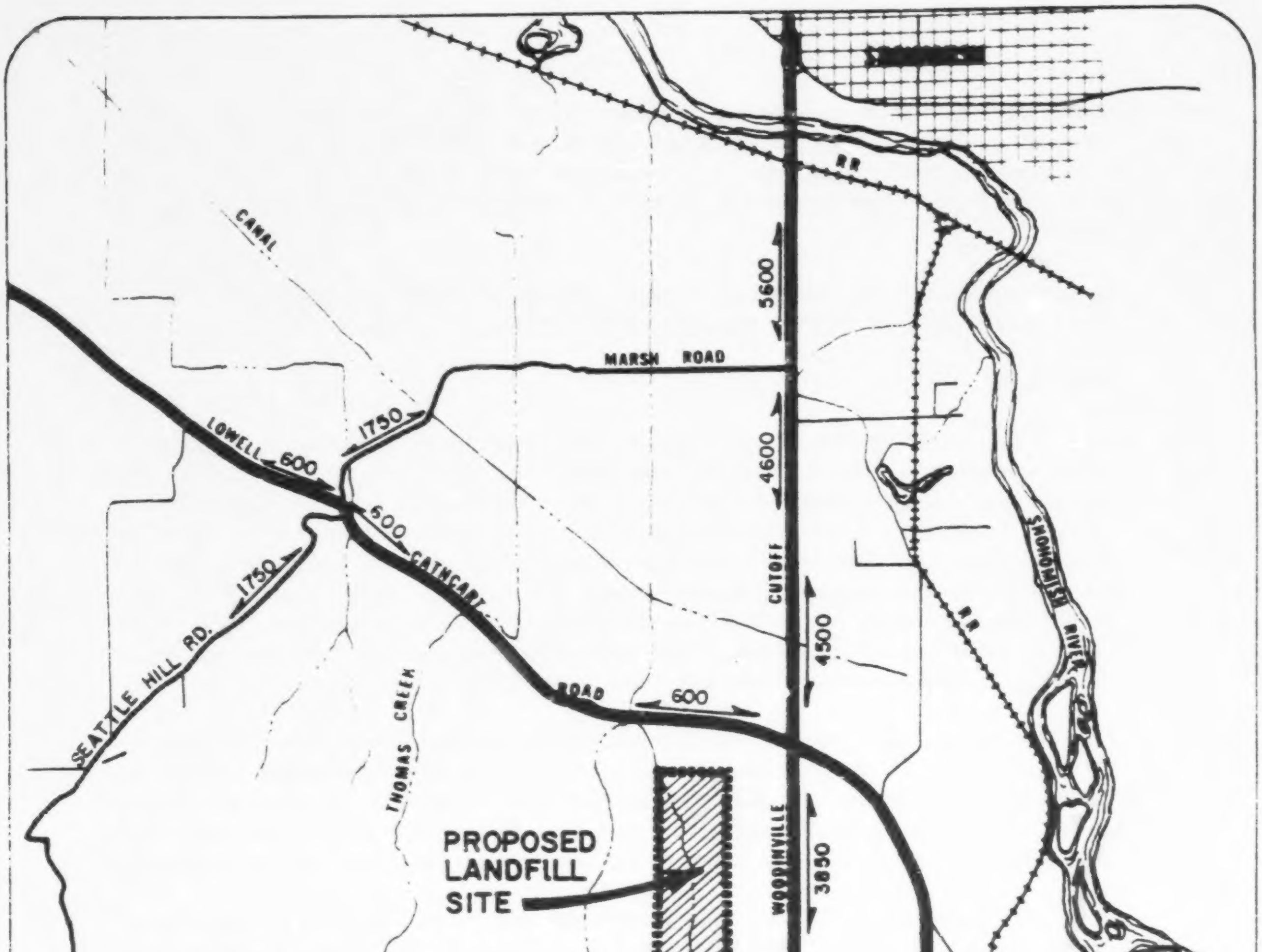
The Woodinville Cutoff (SR-9) and Lowell-Cathcart Road (Bluff Road) are the only arterials in the immediate vicinity of the proposed landfill site. State Route-9 begins at SR-522 (Woodinville - Monroe Highway) near the north King County line and runs northerly through the cities of Snohomish, Arlington and Sedro Woolley to Sumas at the U.S. - Canada border. State Route-9 is a two-lane paved roadway its entire length and is classified as a major highway with partial access control. The maximum speed posted is 50 mph. The 1972 Average Daily Traffic (ADT) on SR-9 between Woodinville and Snohomish ranged between 3,650 and 5,600 vehicles. These volumes are considered a moderate amount of traffic for a major two-lane highway. These arterials are shown on Figure 2-9.

Lowell-Cathcart Road intersects at grade with SR-9 at the base of the bluff near the northeast corner of the proposed landfill site. the road follows the west side of the Snohomish River Valley between the Cathcart community and the City of Everett. Lowell-Cathcart Road experienced 1972 traffic volumes of 600 ADT at its intersection with SR-9. The road could be characterized as a narrow, winding, hard-surfaced road.

While traffic counts on SR-9 for the period 1969-1972 do not establish a trend toward steadily increasing traffic, 1973 ADT counts for SR-9 at the Lowell Cathcart Road intersection indicate a 10 percent increase over 1972 volumes. The 1972 ADT counts are shown on Figure 2-9. Peak hour volumes can be approximated as ten percent of the average daily traffic.

The arterials in the vicinity of the project accommodate existing traffic volumes at a good level of service. Minor delays (less than one minute duration) are sometimes experienced by SR-9 traffic during the morning and evening peak period at the intersection of SR-9 and Lowell-Cathcart Road. Oncoming traffic volumes at times require left-turning SR-9 vehicles to be delayed in making their turn, thereby holding up vehicles desiring to continue through the intersection. The intersection has not had a high accident experience however. Seven accidents have been recorded at this intersection for the years 1971 through 1973. The over four mile segment of highway between Clearview and Marsh Road recorded a total of 62 accidents for the three-year period 1971-1973.

Future improvements to SR-9 are proposed in the ***Snohomish County Transportation Study*** which was adopted by the Board of County Commissioners in 1972. Specifically, this study contains a recommended improvement program for both the 1972-1977 and


CANAL
RR
5600
MARSH ROAD
4600
LOWELL
600
1750
600
CATHCART
1750
SEATTLE HILL RD.
THOMAS CREEK
ROAD
600
CUTOFF
4500
SNOHOMISH RIVER
RR
PROPOSED LANDFILL SITE
WOODINVILLE
3850
LEGEND
000
1972 TWO-WAY AVERAGE DAILY TRAFFIC (ADT)
BROADWAY
152nd ST. SE
VIRGINIA ST
156TH ST SE
SR 9
164th ST. S.E
UNION ST
CATHCART
RR
3900
180th ST. S.E.
VINE ST.
CLEARVIEW
350
1000

CIRCULATION

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-9

1978-1990 time frames. Improvements to SR-9 including addition of a slow vehicle climbing lane between Lowell-Cathcart and 164th Street SE are proposed during the 1972-1977 time period. The improvements proposed for the highway system in the vicinity of the project site during the period 1978-1990 are described below in Table 2-3.

Table 2-3

Recommended Improvement Program for Highway System
(Snohomish County Transportation Study)

Road Name	Limits	Improvement
SR-9 (New Alignment)	Marsh Road - SR-522	Widen existing roadway Construct interchange
128th St. S.E. - 132nd St. S.E.	Dumas Road - SR-9 (Present)	Widen existing roadway Construct new roadway
132nd St. S.E.	SR-9 (Present) SR-9 (New)	Construct new roadway
164th St. S.E.	55th Ave. S.E. - SR-9	Improve to design standards Widen existing roadway

The Washington Department of Highways indicates that the climbing lane proposed for construction on SR-9 is scheduled for construction in the period 1979-1981. Three intersections on SR-9 are scheduled to be channelized during the same period - Vine Street, 164th Street S.E. and Lowell-Cathcart Road. The Highway Department indicated that the proposed realignment of SR-9 between Marsh Road and SR-522 is not scheduled for engineering studies during the next 14 year period.

Noise

Man's subjective response to noise is determined by the sound level eminating from a source of noise and the frequency spectrum of noise. In the event of a proposed new facility, it is important to consider the increase of noise from pre-existing levels.

The impact of noise on a community is based on a measurement which represents the level of sound weighed in accordance with the apparent loudness perceived by an average human and is written as dBA. Steady noise levels are rarely observed. Because of the time varying characteristics of environmental noise, it is necessary to provide a statistical descriptor indicative of the dBA level which is exceeded a specified percentage of the time. The three most commonly used percentile levels are:

1. L_{90} (the ninety percentile level) - L_{90} is the sound level in dBA which is exceeded 90 percent of the time. L_{90} compares well with the minimum levels read with a sound level meter and is representative of the quietest noise levels present.

2. L_{50} (the fifty percentile or median level) - L_{50} is the sound level in dBA which is exceeded 50 percent of the time. That is to say 50 percent of the time the noise is louder than the value indicated. In the absence of loud peaks, such as a distant highway with a uniform traffic flow, the L_{50} provides a satisfactory measure of subjective response to noise impact.

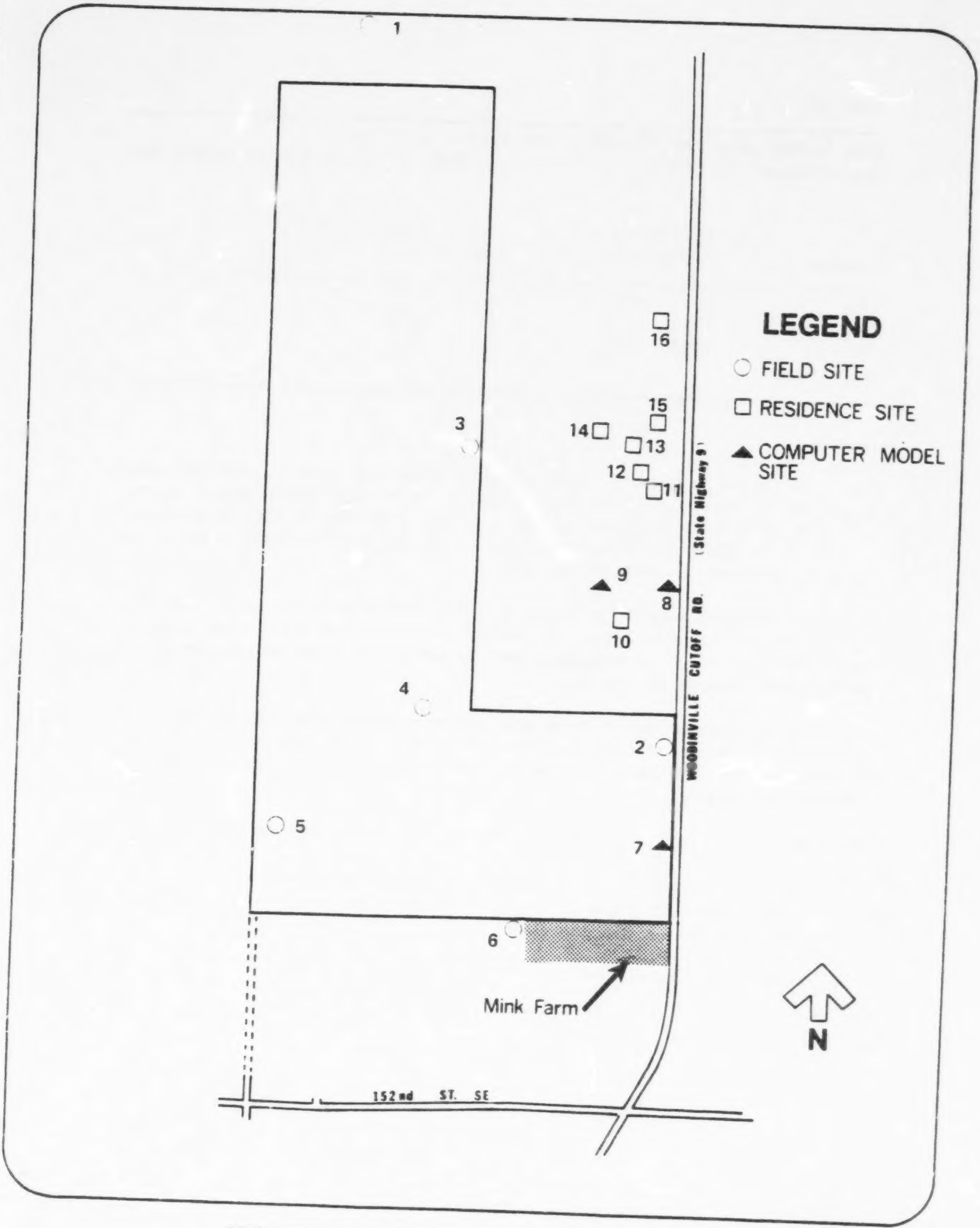
3. L_{10} (the ten percentile level) — L_{10} is the sound level in dBA which is exceeded 10 percent of the time and is the parameter of measurement and prediction most often discussed. L_{10} is an indicator of short duration high-level sounds which often cause annoyance.

The Cathcart site and surrounding roads and nearby noise sensitive receptors used in the noise impact study are shown on Figure 2-10 as indicated. There are several residence sites located between the east site boundary and SR-9. Along the southeast corner of the project boundary is an operating mink farm. Noise measurements were completed at six locations on February 11, 1974, shown as field sites on Figure 2-10. The results of these tests which describe the existing condition are shown in Tables 2-4 and 2-5. This data was then used in the computer impact analysis discussed in Chapter 3.

Table 2-4

Measured Existing Noise Levels
February 11, 1974

Measurement Site	Time	Measured Noise Levels in dBA L_{10}	L_{50}	L_{90}
1	1212	54.4	36.8	33.9
2	1240	61.8	44.7	33.9
2	1709	71.8	58.8	45.4
3	1447	48.0	41.9	36.2
4	1528	42.7	38.6	35.6
5	1605	41.4	38.8	37.4
6	1637	43.5	38.8	36.6


1
3
4
5
6
2
7
9
8
10
11
12
13
14
15
16
LEGEND
○ FIELD SITE
□ RESIDENCE SITE
▲ COMPUTER MODEL SITE
WOODINVILLE CUTOFF RD. (State Highway 9)
Mink Farm
152nd ST. SE
N

NOISE RECEPTOR LOCATIONS

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-10

Table 2-5

Field Traffic Count Data Associated With Existing Noise Levels
Taken February 11, 1974 in the vicinity of the Proposed Cathcart Sanitary Landfill Site

Roadway	Time Period of Traffic Count	(mph)	Cars/ Hour	Trucks/ Hour
SR-9	1240 - 1255	55	116	4
SR-9	1709 - 1724	55	280	4
131st St. S.E. (Bluff Road)	1212 - 1227	40	32	0

Utilities

The area is presently served by water, electrical power and telephone lines. The water is provided by the Cross Valley Water Association with mains located adjacent to the site along SR-9. A 50,000 gallon reservoir is located approximately one mile southwest of the site on 156th St. S.E. Although groundwater resources are limited, many of the residences are served by deep private wells.

No sewers serve this area at the present time and none are projected in the 1990 plan for the area. It should be noted that although soils in the area are not well suited to septic systems, there is no foreseeable need for sewers due to the very low density of development projected for the area.

No natural gas lines are present in the area; the nearest service extends to 700 feet north of 180th (the Clearview shopping area). No major utility corridors are located in the area. However, two miles to the west of the site, the Seattle City Light power lines cross the planning area roughly parallel to the Seattle Hill Road.

Water and Sewer District Plans which affect the area surrounding the Cathcart site:

- o WASH-USE-1 Sewer, Water, Solid Waste, Storm Drainage Studies
- o Farmers Home Administration Sewer and Water Study
- o Cross Valley Water Association Plan
- o Fircrest Sewer District Plan
- o Fircrest Water District Plan

CHAPTER 3

ENVIRONMENTAL IMPACT

GENERAL

Environmental impacts from the proposed action occur in three phases. The first phase includes those impacts associated with the construction and site preparation prior to operation of the sanitary landfill. These first phase impacts are classified as "short-range impacts." The second phase includes those impacts associated with the operation of the sanitary landfill at the site and are classified as "intermediate-range impacts." The third phase includes those impacts occurring after completion of landfill operations aand are classified as "long-range impacts."

TOPOGRAPHY

The proposed action has substantial impact upon the topography of the Cathcart site by its very nature - landfilling. The fill sections will change the shape of the valley running through the site and affect the existing character of the land. This continual topographic change will occur over the life of the project.

The proposed action will not effect the topography of land surrounding the site. The proposed action may, however, indirectly influence or cause development of supportive facilities, which could alter area topography. The addition of a truck climbing lane on SR-9 from its intersection with the Lowell-Cathcart Road extending south up the hill would be an example of such ancillary facility. Construction of such a lane would cause widening of the existing highway with a resultant topographic change. These changes, if determined to be major actions in themselves, would require their own environmental assessment.

Short-Range Impact

A minor change in topography will take place during the site preparation and facility construction phase. A roadway will be constructed leading from the site access point on SR-9 west and then south along the western boundary of the site to the northern portion. The roadway will follow the natural topography and the construction will consist of clearing, minor grading and importing roadway base materials. The land for buildings will be cleared and leveled. Other topography changes will take place in the area prepared for general waste disposal where soil will be excavated and stockpiled during initial site preparation.

Intermediate-Range Impacts

During operation of the sanitary landfill site, topography on the 55 acres developed for waste disposal will continually change. As waste is deposited at the site and covered with earth, existing grades will be raised.

Long-Range Impacts

The existing site topography within the 55-acre disposal area will be raised from 20 to 70 feet in various locations at the completion of landfilling operations. The final elevations and contours (shown in Figure 3-1) have been selected to provide large gently sloping areas suitable for developing both active and passive recreation facilities. Large areas will be left in their natural condition. The final topography should not have noticeable impacts, however, since adjacent property owners' views will not be affected and existing drainage area patterns outside of the site will be preserved.

The holding ponds and diverted creek (on-site) will remain to provide future surface water runoff control and should be developed to enhance the visual aesthetics of the site. The paved, double lane service road will remain as a permanent landmark and can be used to provide vehicular access to the site for future use.

Remedial Measures

The site will be developed in stages so that only a small portion of the site is interrupted at any one time. This will minimize impacts from short-range changes in topography. Topography changes will take place according to an established plan taking into account the surrounding land forms and the desired final use for the site. In this way, impacts resulting from topography changes should be minimized.

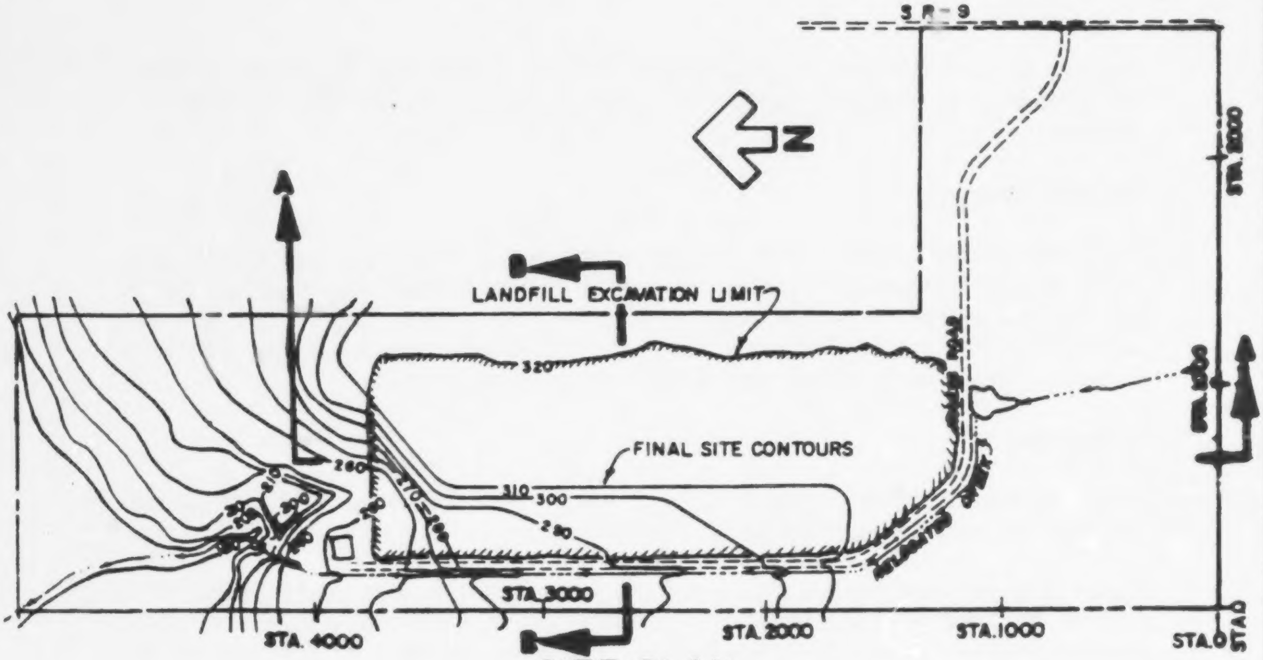
On-site structures used during the operational phase of landfilling should be removed from the site if not usable or compatible with final site use.

GEOLOGICAL AND SOILS

Short and Intermediate Range

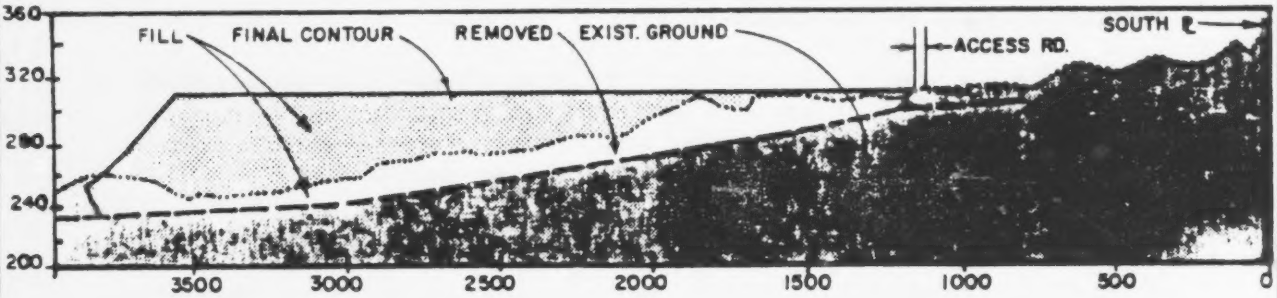
On-site soil materials have high density and high silt content. While silty soils possess beneficial characteristics such as low permeability in place, they may also cause problems in excavation and later in storage and utilization. Excavation will require large equipment. The high silt content with related moisture sensitivity will cause storage and compaction problems.

The excavated soils will be stored in berms at various locations on the site for use as future cover material. The silty on-site soils and stored soils become muddy during wet


S.R.-9
N
A
B
LANDFILL EXCAVATION LIMIT
320
FINAL SITE CONTOURS
310
300
290
280
260
ACCESS ROAD
RELOCATED CREEK
STA.3000
STA. 4000
STA.2000
STA.1000
STA.0
STA.1000
STA.3000

SITE PLAN

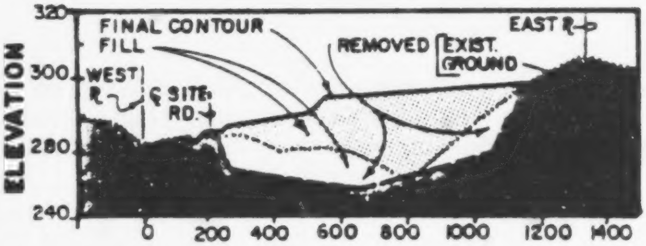
SCALE: 1" = APPROX. 750'


360
320
280
240
200
FILL
FINAL CONTOUR
REMOVED
EXIST. GROUND
ACCESS RD.
SOUTH ℄
3500
3000
2500
2000
1500
1000
500
0

NORTH-SOUTH PROFILE "A-A" THRU ℄ OF SITE

HORIZ. SCALE: 1" = 500'

VERT. SCALE: 1" = 310'


320
300
280
240
ELEVATION
FINAL CONTOUR
FILL
REMOVED
EXIST. GROUND
EAST ℄
WEST ℄
℄ SITE RD.
0
200
400
600
800
1000
1200
1400

WEST-EAST PROFILE "B-B" THRU 55 ACRE FILL AREA

HORIZ. SCALE: 1" = 500' VERT. SCALE: 1" = 310'

FINAL SITE TOPOGRAPHY & SOIL STRATIFICATION

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT – FIGURE 3-1

weather. Collection vehicles could carry mud onto public highways. Stored soils in berms could erode or become unstable. Silty soils also generate dust easily after prolonged dry weather.

Remedial Measures

Mitigation of soils impacts will be through project design and operating procedures. Soil berms used for storage will be placed to reduce adverse noise impacts to adjacent properties and will be covered or seeded with grass to minimize erosion and to control water saturation. Collection vehicles will travel nearly one mile of on-site road and through a collection vehicle wash facility before entering the public highway.

Long-Range

Following completion of individual stages of the fill and completion of the total 55-acre fill area, the geology will have been changed within the fill area.

Figure 3-1 also indicates the anticipated change in surface geology brought about by a number of lifts (a layer of compacted solid waste cells, each enclosed with an earth cover material) placed in the fill area. Initially, the waste to earth proportions will be approximately 25 percent earth. The proportions will change slowly over the years as the organic materials in the wastes decompose into gases, water and a humus like residue. Some inert materials like glass and plastics will break down very slowly. Decomposition of the organic materials occurs at its fastest rate when oxygen is available and when moisture flows through the wastes.

The fill area will settle to fill voids left by the decaying organic materials. Settlement will occur for a number of years after landfilling has been stopped. Future uses of the fill area would be limited since uses such as buildings and roads would require special and more expensive construction procedures due to the uneven settling.

Remedial Measures

Mitigation of long-range geology and soils impacts will be through project design and selection of appropriate future site uses such as: open spaces, parks and recreation areas. Drainage and grade problems resulting from uneven settlement will be corrected by filling the depressions with earth.

WATER QUALITY AND DRAINAGE

The installation of a sanitary landfill at the site requires extensive alterations to the natural ground and surface water patterns to prevent pollution of these flows. Four types of ground and surface waters appear at the sanitary landfill site. These are:

1. ***Off-site surface runoff:*** Surface waters originating from precipitation off the site and entering the site through overland flow.
2. ***On-site surface runoff:*** Surface waters originating from precipitation on the site.
3. ***Off-site groundwater:*** Groundwaters entering the site through pervious soil strata.
4. ***Leachate:*** On-site groundwater polluted by percolation through solid wastes.

If left uncontrolled, these sources of water will leave the site through surface or groundwater flow, polluted by leachate and siltation associated with the solid waste disposal operation. This polluted water would degrade the quality of ground and surface waters leaving the site, as well as presenting a health problem.

Short-Range Impacts

During the site preparation and construction phase, facilities will be constructed to intercept and divert both the off-site surface and groundwaters around the fill area. The creek diversion and road construction activity could result in the siltation of the intermittent creeks on the site. The construction activities associated with the development and preparation of other site features could also result in siltation of surface runoff, if sufficient quantities of rainfall enter the site during the construction phase.

Remedial Measures

Construction activities will be scheduled for the summer months when the intermittent creek flow and rainfall in the area is minimal. Projects will be sequenced to provide control facilities near the start of the site preparation stage.

Intermediate-Range Impacts

On-site surface runoff from the cleared and excavated stages of the fill area, from the area being filled, and from previously filled stages will carry considerable siltation and a minor amount of organic material from the open daily working face. Groundwater flowing from the fill area (leachate) will contain contaminants. Both the sediment and leachate contaminants could have a large impact on the seasonal creek as well as operations in the fill area. The remedial actions for protecting water quality could change the natural drainage characteristics from the 55-acre fill area which represents about 12 percent of the approximate 460-acre watershed above the fill area.

Remedial Measures

Surface and groundwaters from outside the 55-acre fill area will be intercepted by the creek diversion and carried to the north end of the site for discharge back into the original creek bed. The creek dries up in the summer. A dam below the site and a box culvert at Lowell-Cathcart Road block fish migration. A pond will be installed in the creek bed at the upstream diversion point to hold storm runoff from the 420-acre upstream watershed for purposes of controlling peak flows and flooding downstream of the pond. All surface runoff from within the fill area and most water infiltrating into the fill area (some will be lost to evaportranspiration) will be treated and held in a pond prior to discharge into the original creek bed near the north end of the fill area. These facilities will affect the drainage characteristics by controlling peak storm runoff flows and possible flooding downstream of the site. Creek flows should be spread more evenly over a longer period of time and it may be possible to keep the creek from drying up in the summer. The annual volume of water may increase or decrease slightly due to modifications of the surface runoff and evapotranspiration characteristics of the fill area.

Surface runoff from within the 55-acre fill area and from the few acres east of the fill area will be diverted to the on-site runoff pond to allow silts to settle out of the water before it is discharged into the original creek bed.

The on-site soils with high silt content will be used as intermediate cover on the top of each cell of waste to limit the amount of rainfall that infiltrates into the solid wastes. The sides and bottom of the fill area will be constructed of relatively impervious soils or will be sealed to prevent migration of leachate out of the fill area. Leachate from the fill area will be collected, treated, monitored for contaminants and eventually discharged into the on-site runoff holding pond and back into the creek. The leachate treatment system will include an aerated lagoon for removal of BOD and suspended solids. The effluent will be stored in a settling lagoon until it can be sprayed by sprinklers onto specially prepared land treatment areas within the boundaries of the 55-acre fill area during periods of dry and slightly wet weather. Initially, the land treatment area will be located near the southern end of the fill area. After the first two stages of the fill area are completed to final elevation, the sprinkler equipment will be relocated to a specially prepared land treatment area on top of the first and second stage fill area. Some of the water in the effluent will leave the site by evapotranspiration, but the majority will infiltrate into the land treatment area and percolate laterally through the soil before being collected as on-site surface runoff. The land treatment system effluent will be diluted in the on-site runoff holding pond before being discharged into the intermittent creek.

A water quality monitoring program will be undertaken during the life of the landfill in which both surface and groundwater quality adjacent to the site will be monitored. Water quality in the on-site runoff pond will also be monitored.

Long-Range Impacts

The potential exists for contamination of groundwater flows after the landfill operation is completed if these flows come into contact with the waste disposed at the site.

Remedial Measures

The water quality monitoring and leachate control program initiated during landfill operation will be continued after completion of the landfill at the site.

ECOLOGICAL COMMUNITY

Vegetation

The site has no significant or unique vegetation communities on a regional perspective. Comparison with the Kelsey and Coal Creek watersheds (King County), and the area defined by the Renton, Issaquah, Black Diamond and Sumner quadrangles indicates that the vegetation subcategories found on the Cathcart site and adjacent to the site are the common successional conditions found near developing areas. No significant wetlands, Riparian Habitat (water edge), or climax Old Growth Stands are found on the site or adjacent to the site. The site is not indicated on the Army Corps of Engineers' "Resource and Amenities in Washington which should be Preserved or Approached with Care" list. The Botanical Map indicates that site vegetation in terms of the Army Corps of Engineers' inventory is of no particular significance.

Short and Intermediate-Range Impact

Construction of roads, water control and maintenance structures during initial development phases will require the removal of vegetation. Incremental removal of vegetation will occur in each disposal subarea as sanitary landfill operations gradually progress.

Remedial Measures

Following construction of immediately needed facilities, slope treatment by revegetation or covering should be completed to control dust and increased quantities of silty surface runoff. In the maintenance and administrative areas this would be of a more ornamental nature. As landfilling of each disposal subarea is completed, revegetation of the area would be carried out relative to the future use plan. Therefore, at any one time the vegetation would be removed from only a small area except during transitional phases. Prior to final vegetation planting or landscaping, protective ground cover could be employed. This would hold the amount of totally unvegetated area to a minimum.

Long-Range Impacts

Even though the necessary removal of vegetation by this particular project, in itself, may have little local impact, the aggregate effect of disturbing these areas could have negative regional consequences. These vegetation communities, although common, are presently under developmental pressure.

Continued development may, at some point in time, cause depletion of these communities below a level which is considered desirable by the public at large. A particular project may individually have little effect, but in conjunction with a thousand others the impact could be drastic. Regional or county quotas or acreage by vegetation type established by the appropriate governing body would be one way of controlling the cumulative impact.

Remedial Measures

During final use planning and design, the possible negative regional effects should be incorporated into final revegetation of the site.

Wildlife

When the vegetation as part of a community is removed, the dependent wildlife is also removed. The eventual effect is of killing the wildlife on the site. Due to differences in dominance and health, the particular organisms on the site may not perish, but somewhere, after adjustment, a similar number of organisms will be forced to either migrate to unsuitable habitat and expire, or the population which received the influx will incur increased density dependent mortality. Simply stated, removal of habitat after an adjustment period eliminates the wildlife dependent on the site.

Short and Intermediate-Range Impacts

Once initial construction begins progressing through operational phases of landfill, the wildlife on and adjacent to the Cathcart site will be affected. Construction and landfill activities will increase present noise levels. The assessment of noise impact is very difficult to evaluate and little or no documentation of noise impact on wildlife exists. A short-run noise impact will probably occur decreasing as the wildlife affected "learns" that the noise brings no direct threat.

Another impact is with wildlife adjustment. When the vegetation supporting a wildlife community is removed, a number of organisms similar to what was present on the site will expire (Taber, 1970). Though some of the more sedentary and immobile forms may be killed outright, many will migrate to already filled or marginal habitats. After a short period, mortality will remove species which might have become a local nuisance.

The following table indicates the species and numbers likely to be so affected.

Table 3-1

Species and Numbers of Potential Wildlife Nuisances

Species	Numbers	References
Deer	3-5	(Brown, 1961)
Skunks	5	(Garcia)
Coyote	5	(Garcia)
Racoon	2	(Garcia)
Fox	1*	(Garcia)

*It is not certain that fox are present on the site.

Another impact is one concerning the possibility of rodents present at the site. If the site is operated according to specifications established by Snohomish Health District, there should be no rodent problem. Should the site develop rodent problems, Snohomish Health District utilizes a species specific toxin - Raticate (Norbormide) for extermination. According to the Snohomish Health District this toxin has no detrimental effect on wildlife, man, or his domesticated animals.

Remedial Measures

Spatial location for wildlife migration to a large block of undeveloped forest west of the site, the river valley east of the site and undeveloped areas farther east of the site would be dependent on a vegetation corridor. The site presently allows an avenue for migration between the relatively undeveloped area west of the site and general undeveloped habitat east of the site. The extent of the impact depends largely on the extent and the rate of landfilling.

If some species of wildlife become nuisances on adjacent property, a program for trapping or transplanting may be necessary. Rodents should cause no problems on the site if proper sanitary landfill operation procedures are followed.

Long-Range Impact

The effect of the landfill in the short run will obviously be detrimental to the wildlife in the area, but the long-range effects could be beneficial. A landfill once completed excludes most development and will be left to some form of open space. If the surrounding area receives more developmental pressure, the landfill site will guarantee some form of natural cover for utilization by wildlife.

SOCIO–ECONOMIC FUNCTIONS

Snohomish County Planning Department has prepared population growth projections for the census tracts within the county boundaries. As shown on the following table, the population of census tract 521 (in which the Cathcart site is located) is projected to increase through 1990. Although the population increase is at a higher rate than for the county (128 percent compared to 58 percent for the county), the population density for census tract 521 will not equal the 1970 county population density until 1980.

Table 3-2

Projected Population Census Tract 521 and Snohomish County

Place	Area (Sq. Mi)	*Population* 1970	1980	1990	*Density/Sq. Mi.* 1970	1980	1990
Census Tract	50.1	5,116	6,851	11,687	102	137	233
Snohomish County	1,940.0	265,234	3111,503	419,155	137	161	216

Source: Snohomish County Planning Department

The project will not have a significant impact on employment. As noted previously, over 61 percent of the employed in census tract 521 work in Everett or King County. The development of the proposed project should not influence the employment patterns of the population. The projected population is not large enough to exert a change in community structure. It is unlikely that the project will significantly affect the desire of inhabitants to organize a local governmental unit or for annexation patterns to change. The final use includes community recreational facilities such as a park or golf course, then patronage from the general area may result in the development of a "community" identification.

Even though the proposed Cathcart Sanitary Landfill facility has been planned and designed with great effort using the latest technology to minimize environmental effects, some stigma may still be attached to residences and properties adjacent to the site. Deflated land values could occur. It must be concluded that residents and properties adjacent to the landfill site may endure certain hardships.

LAND USE AND ZONING

The Cathcart site is located in an area which could be characterized as low density rural residential. The overall area density is approximately one dwelling unit per 20 acres; however, along the eastern site boundary a number of residences exist on land parcels around three to ten acres in size. The present zoning for the site is Rural Use. Sanitary landfill operations are allowed as a conditional use.

Another factor to be considered is that although the project area is 200 acres, only 55 acres will actually be utilized for landfilling. The 55 acres represent only 0.2 percent of the total land area of the census tract 521. Conservatively, if the entire 200 acres were removed from the present land use potential, it would represent approximately 0.8 percent of the total area of census tract 521.

Thus, the demand for residential land in the general project area is not projected to significantly be changed by the Cathcart site land removal nor change the land use patterns or result in a zoning change. It is also unlikely that future zoning changes will be altered as a result of the project.

AESTHETIC

Individuals evaluate an experience through the use of all their sense organs. Thus, those families living in the immediate area of the proposed action would arrive at their evaluation of the site by their sense of sight, smell and hearing. Cultural biases determine how these sense impressions are evaluated by the individual. Noise and air quality are being dealt with in more detail in separate sections of this chapter. However, these factors do influence any conclusions about aesthetic values.

Short-Range Impacts

During the construction phase of the project, individuals living along roads where equipment would be traveling to and from the site will be subjected to visual annoyances. A road will be constructed from SR-9 into the site at the beginning phase of the project. Local residents who either travel on SR-9 or have visual access from their homes to the eastern portion of the site where road construction is taking place will experience temporary visual and noise effects. Noise effects will also be felt by residents living on 152nd Street South East. Access to the southern end of the site is possible from SR-9 along 152nd Street South East to an unimproved road. However, this means of access is not expected to be used during the construction phase of the project.

Construction taking place in the fill area during the initial phase of operation can not be seen either from surrounding roads or from nearby residences because of screening from buffer and reserved areas maintained from the onset of construction.

Intermediate Impacts

During the sanitary landfill operation phase, the following aesthetic impacts could occur:

Aesthetic Variable	Impacts	Individuals Impacted
Visual	Increased traffic on roads leading to the site	Residents with view of roads leading to the site
Visual	Litter blown off the site	
Noise	Associated noise caused by landfilling equipment on the site	Residents within immediate area (will vary during site life)
Noise	Associated increase in noise level from refuse collection vehicles traveling to and from the site	Residents located along major arterials leading to site
Odor	Associated odors from the site carried by air currents	Residents within immediate area (will vary)
Odor	Associated odors from vehicles transporting garbage to the site	Residents along transport routes

Remedial Measures

Actual visual observation of landfill operations from local residences or by individuals traveling on adjacent roads will be blocked by the topography and vegetation in the buffer and reserve areas. Twenty acres in the southeastern corner of the site have been designated a reserve area as indicated in Figure 1-5. The area contains the only residences and buildings presently located on the site. Retention of the on-site building and the 20-acre reserve would provide a buffer between the site and the residences overlooking that portion of the site.

A buffer zone has been designated around the parimeter of the site as indicated on Figure 1-5. Landfilling or excavation would not be allowed within the buffer zone which will be reserved for screening, perimeter fencing, stable road beds, drainage controls and future buildings. The width of the buffer zone will vary along different sections of the site parimeter, depending upon use of adjacent properties and use of the buffer zone itself. For purposes of preliminary layout, a 200-foot minimum width buffer area has been called for.

The normal method of litter control is the construction of fences as close to the working face area of the fill as possible. The fences are normally constructed of a fine mesh screen to allow air movement through the fence so that litter is less likely to be carried over the fence. The screen must be of mesh fine enough to trap the litter. A site maintenance program will be implemented, whereby personnel continuously collect litter which is scattered on site and trapped by the fences. Methods for collecting litter include hand pickup by site personnel and mechanical pickup by truck-mounted vacuum systems.

After completion of sanitary landfill operations, the site will be converted to a use such as open space or active or passive recreational use. Visual impact from off-site will remain negligible due to buffer areas. On-site visual aspects will be a function of the final use, but should provide the viewer with a positive effect of a landscaped or open space type setting. Odors from solid waste will not be present and odor from gas generation will be controlled through dissipation or burning.

HEALTH

The health aspects of the sanitary landfill operation will be of importance to the site operators, drivers of collection and transport vehicles, the occasional public visitor, and the nearby community. The areas of concern would be vectors, gas production, water pollution, hazardous materials and barriers to trespass.

Short-Range Impacts

The potential for health impacts during the construction and site preparation is minimal.

Intermediate-Range Impacts

Vectors

A biological vector is any rodent, bird or insect which transports desease causing organisms to humans. Solid waste can act as both a source of food and harborage for various health vectors in improperly operated solid waste disposal operations.

Remedial Measures

The daily covering and compaction of the refuse with soil in a properly operated sanitary landfill does much to correct this potential problem. If the refuse is frequently covered, it is no longer a source of food or harborage for rodents. The soil cover, if well compacted, will prevent the emergence of flies from the refuse. A potential will exist for birds to feed from the refuse before it is covered with soil. This problem can be alleviated by keeping the working face of the fill as small as possible. A program should also be established for rat baiting on the site to assure that a rodent problem does not occur. The operating procedures for the site shall contain requirements for periodic inspection by the Snohomish Health District.

Gas

Gases produced within a sanitary landfill consist mainly of carbon dioxide, nitrogen, methane, hydrogen and hydrogen sulfide. Hydrogen sulfide has an obnoxious odor, but would not be of significance from a health standpoint. Methane is an odorless, lighter than air, explosive gas that can accumulate in enclosed structures on or adjacent to the fill, if allowed to migrate underground out of the fill area. The other gases produced exist in high concentrations in the atmosphere and have no health significance.

Remedial Measures

The Cathcart Sanitary Landfill will be constructed to provide a barrier along the bottom and sides of the fill. Gases will be vented to the surface at controlled locations where they can either be burned or dissipated into the atmosphere as required to control odors.

Water Pollution

Leachate flowing out of a landfill can add bacterial, organic and chemical contaminants to the groundwater and surface water. Under certain conditions the contaminants can pollute the waters to where they are unfit for domestic, irrigation, stock watering or swimming purposes.

Remedial Measures

The Cathcart Sanitary Landfill will be constructed to provide a barrier around and under the fill area for collection and treatment of the leachate prior to discharge into the intermittent creek presently running through the site. Leachate production from the landfill will be reduced, and hopefully eliminated, through the use of tight on-site soils for cover and barriers.

The effluent discharged into the creek must meet state and federal standards. Monitoring will be supervised by both the Washington Department of Ecology and the Snohomish Health District.

Hazardous Materials

Hazardous materials including, but not limited to, explosive, medical wastes, pesticides and chemicals harmful to public health or the environment will not be accepted at the site.

Barriers to Trespass

The deep excavation cuts along the east side of the fill area, the heavy equipment in the fill area, the leachate treatment facilities and the on-site runoff holding pond would be potential safety hazard areas for unauthorized people entering the site. Those areas will be fenced and provided with warning signs.

CIRCULATION

Short-Range Impacts

The potential for increased traffic volumes on local roads during initial site preparation is minimal. Delivery and removal of heavy equipment will be a one time operation. The arrival and departure of workers should not significantly effect traffic.

Intermediate-Range Impacts

It is estimated that 40 trucks will unload at the proposed landfill site on an average weekday. Approximately 10 trucks will unload at the site on an average weekend day, if the site remains open on weekends. Variations from these averages will probably be in the range of plus or minus 30 percent for peak and low days each year.

Trucks may reach the proposed landfill site via major arterials which connect or are planned to connect to SR-9, i.e. Maltby Road, 180th Street S.E., 132nd Street S.E., Lowell-Cathcart Road and SR-2. Approximately 2/3 of the trucks will enter the site from the north on SR-9 and 1/3 from the south. The proposed access to the landfill site is from SR-9. The intersection of the access road and SR-9 occurs on a five percent uphill grade from the north. The grade is approximately 1-1/4 miles long with one mile of the grade occurring north of the intersection with the proposed access. The access road will have a grade approaching five percent for nearly 1,000 feet of its length. The point of access from SR-9 would occur on a straight section of highway 1/4 mile north of an existing horizontal curve, thus providing over 1/4 mile of sight distance in each direction.

The addition of truck traffic to the significant volume of other traffic on SR-9 will reduce the traffic capacity and will increase the potential accident rate of the highway. Speed reductions from near 50 mph to speeds of 10 to 15 mph can be expected for the trucks climbing the five percent grade from Rees Corner. Also, trucks approaching the site from the south on SR-9 will be required to slow considerably on the five percent downgrade to safely turn onto the landfill access road. Decreased truck speeds on this two-lane highway will cause a corresponding delay of other vehicles. Being delayed behind slow moving trucks increases the tendency for the delayed driver to take risks in passing of these trucks. Consequently, the potential for accidents is increased.

Increased truck traffic and other traffic on arterials will increase vehicle conflicts at major intersections. Lowell-Cathcart Road, while it is the most direct route from the core of Everett, is not suited for use by a large volume of trucks because it is a narrow and winding road with short segments suitable for passing.

Remedial Measures

The addition of a climbing lane to SR-9, adopted by the Board of County Commissioners and scheduled for construction around 1980 by the State Highway Department, may be required soon after landfill operations begin at the proposed site. A climbing lane would eliminate the delays of vehicles behind slow-moving trucks ascending the five percent upgrade from Ree's Corner. A reduction in the estimated volume of truck traffic approaching the landfill area from the north can be attained by routing Everett area trucks via routes south of the landfill site. This reduction in the number of trucks approaching the landfill site from the north would tend to postpone the need for the climbing lane on SR-9. In addition, channelization for turning vehicles may be required at the SR-9 intersection with Lowell-Cathcart Road.

Long-Range Impacts

Traffic utilizing the site relative to landfill activities would cease after closure of the site. However, traffic corresponding to future site use would continue.

AIR QUALITY AND GAS PRODUCTION

Short and Intermediate-Range Impacts

The construction and site preparation activities could result in dust generation during clearing and soils excavation. Dust also will be generated by day-to-day waste hauling and covering operations. A water truck will be available for dust control in order to minimize this air pollutant. In addition, the access road from SR-9 will be paved.

Air pollution caused by smoke should not occur as burning of the municipal solid wastes will not be permitted. Fire control equipment will be available to put out an accidental fire.

Stumps and debris from land clearing will be occasionally burned under atmospheric conditions that minimize the air pollution potential to adjacent properties and only as permitted by the appropriate regulatory agency.

Aeresols from spraying the pretreated leachate onto the land treatment area may occur on windy days, but will be confined to the property by distance and trees in the buffer zones. Spraying will not be done on days where wind speed and direction will cause the aeresols to blow into the operation area or across sections of the road being used by vehicles.

Vehicular pollutants - carbon monoxide, hydrocarbons and oxides of nitrogen - will be emitted by trucks hauling the solid wastes and earthmoving vehicles used to prepare the site for disposal of wastes and to cover the wastes after each day's operations. Concentrations of these pollutants are not expected to exceed applicable ambient air quality standards. Low concentrations of these pollutants are expected because of the extremely low population density of the surrounding area and the air mixing of pollutants.

In the sanitary landfill, organic waste is converted into inorganic materials, water and gases through biodegradation. In the presence of oxygen, the biological activity is carried out by aerobic bacteria and CO_2 is the primary gas produced. After the available oxygen has been utilized by this process, which normally takes several months, the biodegradation is carried out by anaerobic bacteria. In the anaerobic process, CO_2, methane, ammonia, hydrogen sulfide, nitrogen and hydrogen gases are produced. The volume of gas produced is theoretically 15 cubic feet at atmospheric pressure per pound of volatile solids reduced. In the landfill it can be assumed that 35 percent of the waste is reducible, the density is 1,200 pounds per cubic yard and the gas production potential over the life of the landfill is 6,300 cubic feet of gas per cubic yard of fill at atmospheric pressure. Although the potential gas production requires a number of years to take place, gas production rates are significant. Since the gas produced can contain up to 50 percent methane, it can represent an explosive hazard if allowed to accumulate in a confined area.

The gas produced at the landfill can have several effects. If concentrated when vented to the atmosphere, odors can result. Since the methane and hydrogen portions of the gas are flammable, fires may occur either in the fill itself or at points where gas is concentrated when vented to the atmosphere. Cases have been recorded where gas has migrated horizontally for considerable distances in the subsurface soils and caused explosions in the basement of structures. The ammonia and CO_2 gases can dissolve in the moisture present in the fill. The CO_2 in part forms a weak acid (carbonic acid) in solution which will react with metals, especially iron, causing the metals to enter the solution. The CO_2 in solution also readily reacts with limestone, greatly increasing the $CaCO_3$ hardness of the solution.

Remedial Measures

The daily covering and compaction of soils on the solid waste will effectively control odors at the site if the operation is properly maintained. A system will be required for venting the gas produced by decaying waste at the site.

A method of gas control would be the construction of a gravel-filled ditch on the top of each cell. This ditch would act as a gas vent because of the porous gravel. A ditch backfilled with gravel should also be constructed at the site perimeter to assure that gas did not migrate laterally from the site. This control system would then be monitored to assure that gas was venting properly.

If it were found that gas were accumulating in the cells and not venting properly, a pipe network could then be constructed to collect gas from the cells or gravel-filled ditches. The gas collected in the pipe could then be burned prior to release to the atmosphere for odor control, air pollution control and to prevent potential fire hazards.

Long-Range Impacts

Gas generation can continue after completion of the landfill as the waste decays, with impacts similar to those discussed in Intermediate-Range Impacts.

Remedial Measures

The gas control program initiated during landfill operations should be continued after the landfill operation is completed at the site.

NOISE

An assessment of noise impact upon the surrounding community caused by the proposed sanitary landfill was made by Northwest Environmental Technology Laboratories, Inc. The present background noise was measured for comparison to predicted noise levels generated by the proposed landfill operation.

Noise predictions are made utilizing a computer model which generates an estimated composite noise form (suggestive of proposed landfill operations) and then computes its intensity at various locations. These intensities in the model (as well as the actual site) are modified by distance from the source; natural land barriers, such as topography and vegetation; humitidy; angle of perception; wind and reflections.

Sound intensity is measured in decibels (dB). Decibels follow a logrithmic scale rather than a standard arithmetic progression. In other words, two sources simultaneously generating sounds of intensity 60 dB would cause a total sound intensity of 63 dB rather than 120 dB, as in an arithmetic progression. Noise levels of various activities familiar to all are shown in Figure 3-2.

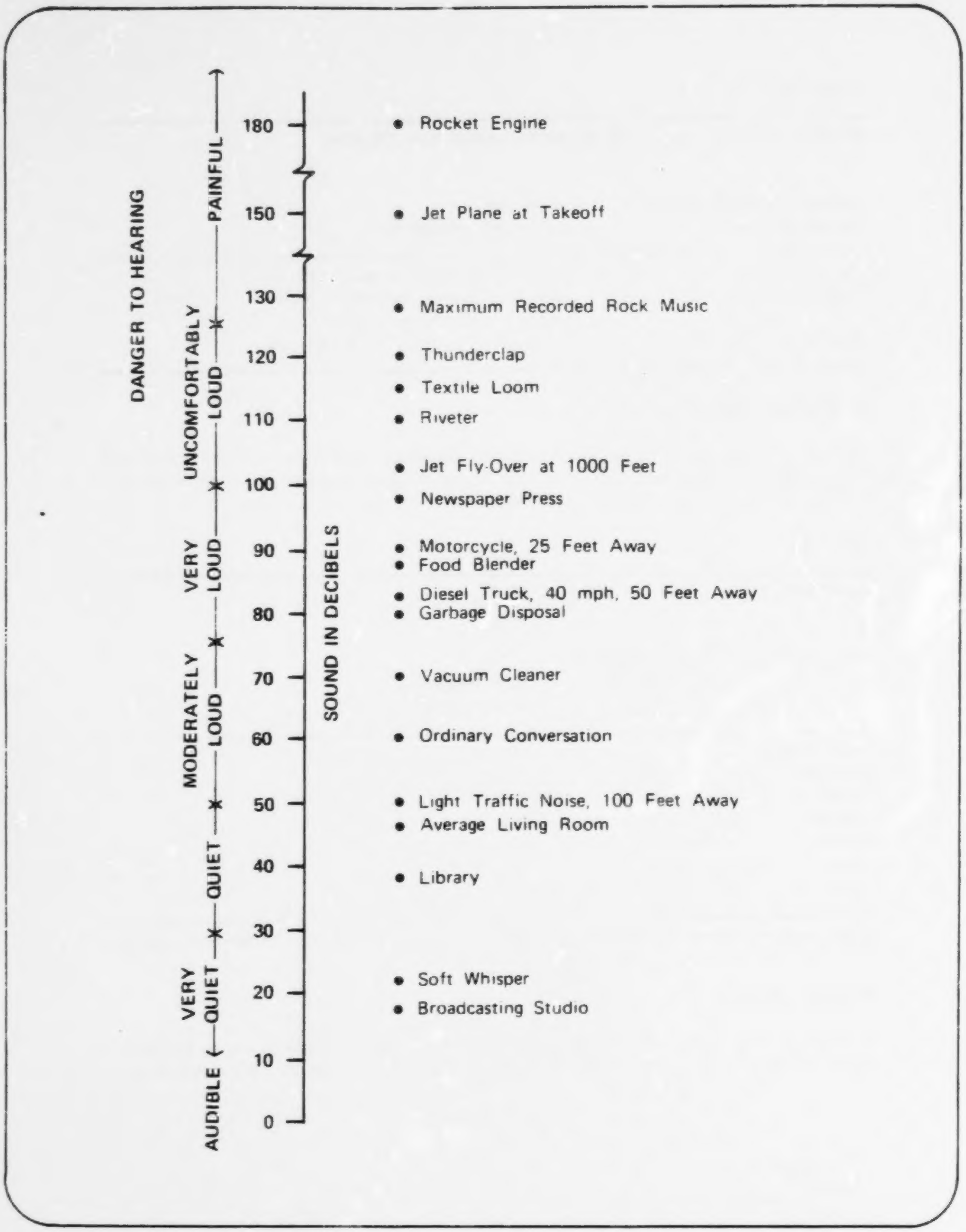
Various noise levels have a range of effects on people who are within a certain physical distance from the origin of the noise. Noise levels and their effects on people are shown in Tables 3-3 and 3-4.

Table 3-3

Estimates of Magnitudes of Noise Effects On People In dB(A)

Effect	Moderate Level	Appreciable Level
Annoyance	40	60
Sleep Interference	40	70
Speech Interference	45	60
Task Interference	55	75
Physiological Stress	*	90
Hearing Damage Risk	70	90
Startle	*	110

Source: "Noise from Construction Equipment and Operations, Building Equipment and HHome Appliances," U.S. EPA,



NOISE LEVELS OF FAMILIAR ACTIVITIES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT – FIGURE 3-2

Table 3-4

Increase Of Noise Level And Expected Community Reaction

Increase of Noise Above Pre-Existing Level	Expected Community Reaction
Up to 5 dB(A)	Few complaints if gradual increase
5 to 10 dB(A)	More complaints, especially if in conflict with sleeping hours
Greater than 10 dB(A)	Substantial number of complaints

Short-Range Impacts

The construction and site preparation will require various types of construction equipment. The noise levels associated with this type of construction equipment with and without feasible noise controls is shown in Table 3-5.

Table 3-5

Equipment Noise Levels In dB(A) at 50 Ft.

	Present Noise Level	With Feasible Noise Control
Front loader	79	75
Backhoe	85	75
Dozer	80	75
Tractor	80	75
Scraper	88	80
Grader	85	75
Truck	91	75

Source: "Noise from Construction Equipment and Operations, Building Equipment and Home Appliances," U.S. EPA, 1972.

Remedial Measures

During the initial construction stage, noise exposure to nearby residents will be somewhat attenuated due to topography and the vegetated buffer zones. Construction would be only allowed during regular hours, so as not to disturb evening or sleeping hours. If these restraints fail, then suitable noise controls on equipment should be required to limit noise generation to within acceptable limits.

Intermediate-Range Impacts

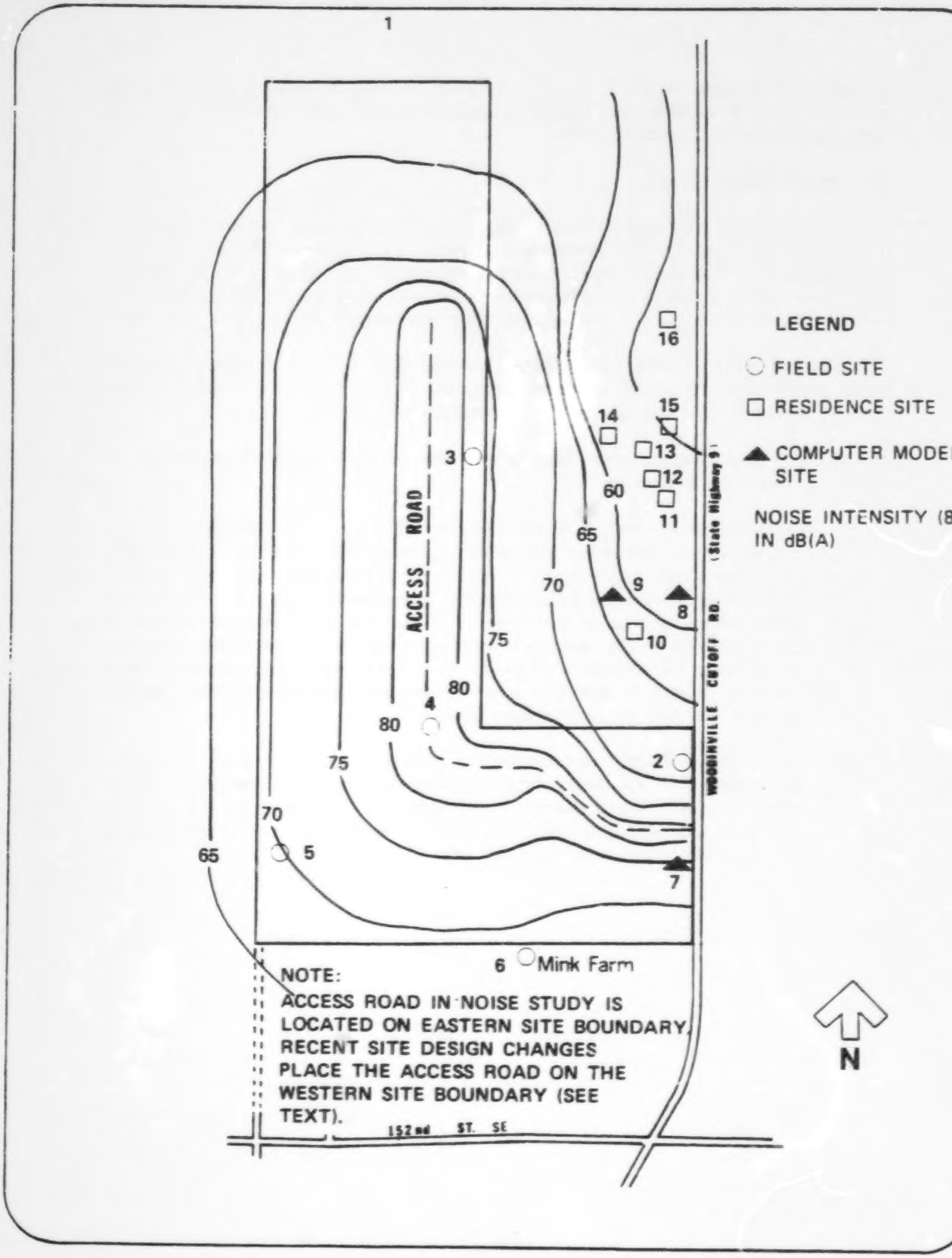
Actual noise levels attributed to landfill operations or refuse haul that would occur at any specific location near the landfill are a function of a number of variables. These variables include: background noise levels already present at that location, the distance from the location to the landfill operation noise source, topography, trees and structures between the noise source and the location, and meterological conditions at that time.

The proposed sanitary landfill operations will increase noise levels over present background levels on the site and within the surrounding area. Landfill equipment and increased highway traffic will be the source of these increased noise levels.

Reduction of data collected at the Cathcart site and computer modeling resulted in the following noise level predictions:

1. Noise eminating from the landfill operation will occur from egress/access trucks, a single landfill compactor, a dozer and a scraper. The "worst case" noise levels were determined and the resulting isopleths plotted (see Figure 3-3). The contours represent lines of equal noise level and give some idea of the dissipation of noise relative to distance from the site. Recent site layout changes have placed the access road on the western site boundary rather than on the eastern boundary as shown in the noise study. This would, in effect, lessen the intensity of noise towards the east, a developed area, and increase the predicted noise intensity towards the west, an undeveloped area.

2. Noise levels resulting from the landfill operations within the proposed facility and average hour and peak hour traffic based on predicted increased traffic levels were evaluated. The projected traffic levels are listed in Table 3-6 and the increased noise levels resulting from these traffic conditions, with and without the proposed action, are shown in Table 3-7.


1
ACCESS ROAD
3
4
80
80
75
75
70
70
65
65
60
5
6 Mink Farm
7
8
9
10
2
11
12
13
14
15
16
WOODINVILLE CUTOFF RD. (State Highway 9)
152nd ST. SE
LEGEND
FIELD SITE
RESIDENCE SITE
COMPUTER MODEL SITE
NOISE INTENSITY (80) IN dB(A)
N

NOTE:
ACCESS ROAD IN NOISE STUDY IS LOCATED ON EASTERN SITE BOUNDARY. RECENT SITE DESIGN CHANGES PLACE THE ACCESS ROAD ON THE WESTERN SITE BOUNDARY (SEE TEXT).

PREDICTED NOISE ISOPLETHS

Table 3-6

Traffic Projection In The Vicinity Of The Proposed Cathcart Sanitary Landfill Site

		Truck Traffic Increase		
Roadway	ADT	No. of Trucks In Peak Hr.	Trucks/Hr. On Roadways	Speed (mph)
SR-9 north of Access Road	30	10	20	55
SR-9 south of Access Road	10	3	6	55
Access Road	40	13	26	10

Table 3-7

Predicted L10, dBA Noise Levels At Selected Sites In the Vicinity Of The Proposed Cathcart Sanitary Landfill Site

Site	Maximum Noise From Landfill	Highway Noise		Total Noise		Without Development	
		Ave. Hr.	Peak Hr.	Ave. Hr.	Peak Hr.	Ave. Hr.	Peak Hr.
6	72.4	53.0	53.2	72.4	72.5	46.5	47.3
10	63.1	63.0	63.6	66.1	66.4	56.5	58.7
11	56.9	65.0	65.7	65.6	66.2	58.2	60.6
12	56.7	64.0	64.7	64.7	65.3	57.3	59.7
13	56.2	63.8	64.5	64.6	65.1	57.3	59.5
14	57.7	61.6	62.1	63.1	63.4	55.3	57.3
15	55.1	65.0	65.7	65.4	66.1	58.2	60.6
16	52.9	65.0	65.7	65.3	65.9	58.2	60.6

Comparing the predicted "worst case" noise impact with noise guidelines, it is seen that for nearby residential receptors, the total composite noise impact is well within the 70 dBA L_{10} level for applicable land use. Such noise impact is compatible with residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, etc., and is conservatively well within the guidelines cited by the U.S. Department of Housing and Urban Development as applied to external noise exposure standards for new construction sites.

At these same locations, the increase of noise above pre-existing levels due to the proposed project will vary from 7 to 10 dBA and will occur during the daytime at times of relatively light traffic conditions. From Table 3-4 such increases are expected to result in some adverse community response, which will be mitigated to a limited extent by the fact that the increase in noise level will not conflict with sleeping hours.

The total noise levels which approximate the design noise level for applicable land use will be experienced at the mink farm located at the southeast boundary of the proposed facility. The greatest noise impact to the mink farm would occur when the sanitary landfill operation is concentrated in the southern portion of the project area shown in Figure 1-5. At that time, the increase in noise level could approach 26 dBA above present conditions (based on the original site design which is now altered).

Remedial Measures

Noise levels can be reduced by the use of barriers and ground cover. Noise levels are also a function of relative elevation between the noise source and receptor. The landfill operation noise could, therefore, be attenuated by the topography, in that the landfill operations are conducted at lower elevations than the surrounding ridges on both the eastern and western site boundaries. Possible additional mitigating factors could be the placement of an earth berm and resulting noise barrier directly north of the mink farm. In addition, the concentration of landfill activities within the proposed facility was moved farther away from the mink farm than previously planned in order to reduce noise levels at that site. Noise control devices have an appreciable reduction effect on noise generated by equipment and could be required on all operating equipment.

Long-Range Impacts

Once landfill operations are completed, noise generation and associated impacts should cease. These would be replaced by noise generation associated with future use.

CHAPTER 4

UNAVOIDABLE ADVERSE IMPACTS

Some adverse environmental effects are associated with the proposed action. Remedial measures which are part of the project design, or proposed in this report for possible implementation, would reduce adverse environmental impacts. These measures could be carried out by project design, public agencies, private organizations and individuals.

After careful attempts at mitigation, some adverse environmental impacts still remain and are unavoidable.

1. Modification of natural topography will occur.
2. The 55-acre fill area's soil structure will be altered, thus limiting its potential future uses. The soil structure will make a less favorable support for construction of heavy buildings.
3. The natural ground and surface water patterns will be altered.
4. Temporary aesthetic effects of removing vegetation and replacing it with a sanitary landfill site will occur.
5. Wildlife habitat and associated wildlife will be removed during the site life of the sanitary landfill. A possible permanent wildlife reduction may occur if the land use after site completion reverts to an active people-oriented use.
6. Possible decreases in land values and increases in noise levels from landfill operations and truck access/egress will result in social costs to property owners adjacent to the site.
7. Traffic related to the use of the sanitary landfill will increase roads in the region.
8. Noise, some local air pollution and minimal traffic inconvenience will occur during construction.

CHAPTER 5

ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the construction and operation of the proposed sanitary landfill at the Cathcart site can be divided into three major categories with the resulting subcategories:

- No-Action
- Alternatives to the Project
  - o Alternative Solid Waste Disposal Systems
    - . Continuance of the present county disposal system
    - . Regional rail haul disposal
  - o Alternative Locations for the Sanitary Landfill
- Alternatives Within the Project
  - o Alternative Solid Waste Disposal Methods
    - . Incineration
    - . Pyrolysis
    - . Recycling
    - . Milling
    - . Baling
  - o Alternative Disposal Concepts at the Site
    - . Types of wastes accepted
    - . Type of vehicles received
    - . Starting location of landfill operation
    - . Final elevation and contours

NO–ACTION

Two possible situations exist which could bring about the No-Action alternative resulting in not developing the Cathcart site as a sanitary landfill. These are as follows:

- o Continuance of the present county disposal system
- o Development of another site for a sanitary landfill

Both of these situations or alternatives are discussed in some detail in later sections of this chapter. If either of these situations were to occur, the Cathcart site would not be utilized for a sanitary landfill operation. Thus, the property would be retained in its present undeveloped state. However, at such time as the present property owner desires, and at his discretion, the property could be developed. The possible alternative uses of the property would be determined in most cases by the existing local zoning ordinance, or if a zone change is proposed, by the lists of permitted uses in both the existing or proposed zoning regulations.

The present zoning of the site is Rural Use which is quite permissive in that it allows most of those uses allowed only as conditional uses in residential and agricultural zones. Examples are duplexes, hospitals and commercial kennels. In addition, this zone permits mobile homes on appropriate sized lots and single-family residences. Those uses permitted with a conditional use permit in Rural Use Zones include a wide variety of uses such as permanent circus establishments and amusement parks, drive-in theaters and sawmills.

ALTERNATIVES TO THE PROJECT

Alternative Solid Waste Disposal Systems

Continuance of the Present County Disposal System

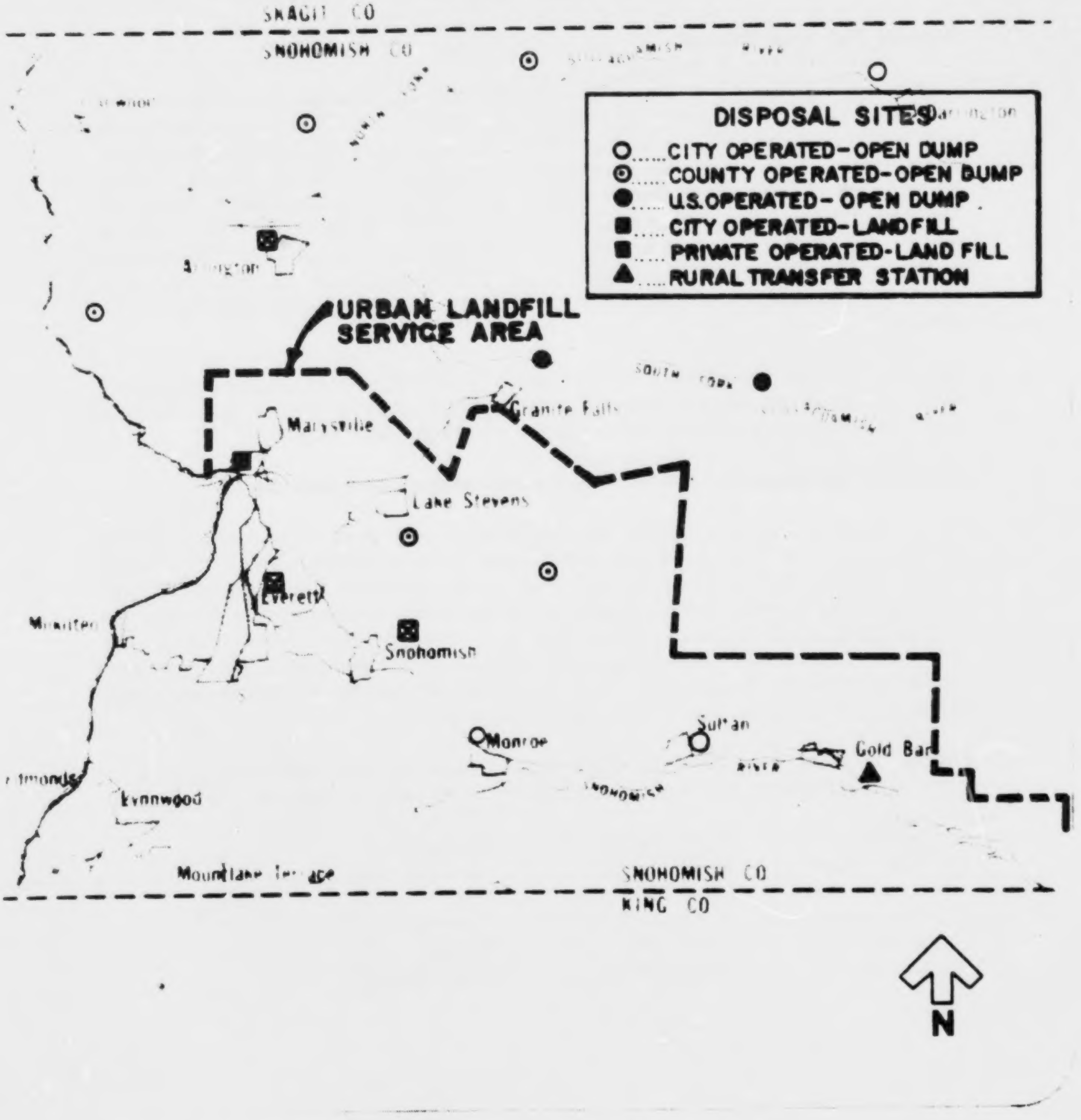
Solid waste disposal operations presently serving the communities in Snohomish County include fourteen open dumps and landfills of which six are located within the Cathcart landfill service area as shown in Figure 5-1.

The open dumps are characterized by infrequent or no earth cover, windblown paper, litter, odors, flies, rodents, smoke from occasional fires and a general unsightliness. In many instances, the dumps are located adjacent to rivers or streams where contaminated surface runoff and subsurface runoff is allowed to drain into the rivers or streams.

The landfills are previous open dumps where the operations have been slightly upgraded by compacting the waste into smaller volumes and covering the compacted wastes with earth at least weekly or daily for some sites. No burning on-site is allowed. The daily earth cover reduces many of the visual, aesthetic, animal feeding, fly, rodent and litter problems of the open dump. However, the landfills can have adverse impacts on surface and groundwater quality and can cause migration of dangerous gases onto adjacent property.

The Everett landfill, which presently receives the majority of the wastes in the Cathcart landfill service area, will reach its capacity in late 1974 and must be closed. The other county landfills and dumps are small, have little remaining capacity, and have inadequate physical characteristics for conversion to sanitary landfills. Thus, waste volumes presently handled at the Everett landfill will have to be disposed of at county disposal sites which are inadequate to accept the increased waste loading.

The only Snohomish County disposal site of sufficient capacity to accept the waste volume presently handled at the Everett City landfill is located near Lake Stevens, and is referred to as the Lake Stevens landfill. Even this site is severely limited with respect to size. The Lake Stevens landfill was not designed according to sanitary landfill criteria, and does not have proper environmental controls to prevent ground and surface water contamination. The site also has other deficiencies which could be corrected, such as improper waste compaction. It could not be modified to enable suitable water pollution control, however.



SKAGIT CO
SNOHOMISH CO
DISPOSAL SITES
○ ...... CITY OPERATED-OPEN DUMP
⊙ ...... COUNTY OPERATED-OPEN DUMP
● ...... U.S. OPERATED-OPEN DUMP
■ ...... CITY OPERATED-LANDFILL
■ ...... PRIVATE OPERATED-LAND FILL
▲ ...... RURAL TRANSFER STATION
Darrington
Arlington
URBAN LANDFILL SERVICE AREA
SOUTH FORK
Granite Falls
Marysville
Lake Stevens
Everett
Mukilteo
Snohomish
Monroe
Sultan
Gold Bar
RIVER
Edmonds
Lynnwood
Mountlake Terrace
SNOHOMISH CO
KING CO
N

EXISTING DISPOSAL SITES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT – FIGURE 5-1

Continuance of the present waste disposal system at this time will result in:

- o Continued use of the open dumps and landfills which are not in conformance with proposed Snohomish Health District Regulations Governing Solid Waste Handling
- o Approximately 150,000 tons per year of solid waste being disposed of at county sites which are inadequate when the Everett landfill is closed in later 1974

Regional Rail Haul Disposal

A study on disposal of solid wastes on a regional level was recently completed. the study considered rail haul of wastes from Snohomish, King, Pierce, Thurston, Lewis, Cowlitz and Clark Counties to a regional disposal site at a coal strip mine near Centralia, Washington. The proposal was found not to be economically feasible. The cost for all seven counties would be approximately 30 percent higher than that of local land disposal operations. The cost difference for Snohomish County could be over 30 percent due to longer rail haul distance. A few years lead time would be necessary to construct a rail transfer station in Snohomish County and many years may be necessary to develop the inter-county cooperation necessary to achieve large scales of operation that would make the project possible.

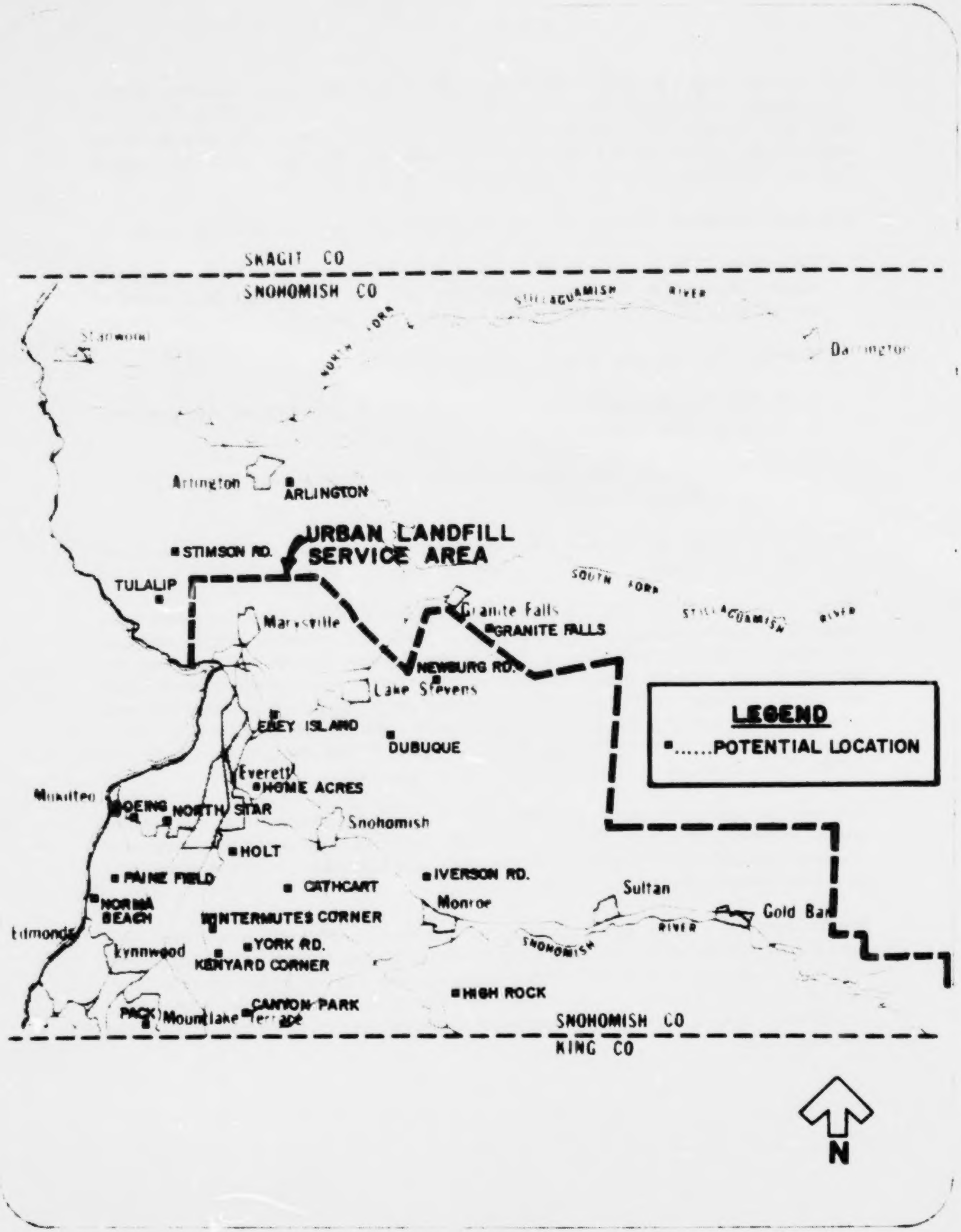
No other locations for disposing of solid wastes outside Snohomish County are currently being considered by regional planning efforts and Snohomish County does not have adequate authority to consider such sites on an independent basis.

Alternative Locations For The Sanitary Landfill Within Snohomish County

Twenty potential sanitary landfill locations within the county were evaluated during preparation of the Interim Report, ***Solid Waste Management Planning***, in Snohomish County, during 1970 and early 1971 and during subsequent investigations by the Snohomish County Public Works Department and consultants. The locations are indicated in Figure 5-2. After evaluation, many sites were eliminated from further consideration for a variety of reasons including physical deficiencies for operating a proper sanitary landfill, excessive site development costs, inadequate land availability, inconvenient access, excessive haul distances and adverse impact on neighbors.

Eighteen locations were identified in the Interim Report as being potentially suitable for a sanitary landfill operation and included the following (refer to Figure 5-2 for location):

Arlington
Ebey Island
Canyon Park
High Rock
York
Cathcart
Holtz Ravine
Norma Beach
Paine Field
Home Acres
North Star
Stimson Road
Granite Falls
Newberg Road
Pack
Dubuque
Tulalip
Lake Stevens


SKAGIT CO
SNOHOMISH CO
Stanwood
NORTH FORK
STILLAGUAMISH RIVER
Darrington
Arlington
ARLINGTON
URBAN LANDFILL SERVICE AREA
STIMSON RD.
TULALIP
Marysville
Granite Falls
GRANITE FALLS
SOUTH FORK
STILLAGUAMISH RIVER
NEWBURG RD.
Lake Stevens
EBEY ISLAND
DUBUQUE
LEGEND
■......POTENTIAL LOCATION
Everett
HOME ACRES
Mukilteo
BOEING
NORTH STAR
Snohomish
HOLT
PAINE FIELD
CATHCART
IVERSON RD.
Monroe
Sultan
Gold Bar
SNOHOMISH RIVER
NORMA BEACH
Edmonds
WINTERMUTES CORNER
Lynnwood
YORK RD.
KENYARD CORNER
HIGH ROCK
PACK
Mountlake Terrace
CANYON PARK
SNOHOMISH CO
KING CO
N

ALTERNATIVE SANITARY LANDFILL SITES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT – FIGURE 5-2

The locations were evaluated as to approximate cost for developing a sanitary landfill, major physical deficiencies, site capacity, surrounding land uses, accessibility, future use, and impact on solid waste collection costs due to hauling distances. The Interim Report recommended a more detailed analysis of the Paine Field, Cathcart, North Star, Canyon Park and York locations prior to final selection of a landfill site.

Subsequent evaluation of these five alternative locations had the following results:

- *Paine Field:* The site is located in the flight path of the Paine Field Airport and seagulls attracted to the site by open earth and the wastes could be a hazard to aircraft using the airfield. The site was, therefore, dropped from further consideration.
- *Cathcart:* This site was retained for further consideration.
- *North Star:* This site was dropped from further consideration because of its proximity to the Paine Field Airport.
- *Canyon Park:* This site was dropped from further consideration because of poor on-site soils and inadequate drainage.
- *York:* This site was dropped from further consideration because of poor soils and inadequate drainage.

Three new potential sites, Kennard Corner, Wintermutes Corner and Iverson Roads, were identified for further evaluation. Initial evaluation of climatic influences, zoning, land use, site access, suitable utilities, soils, geology, hydrology and drainage indicated that the Kennard Corner location should be rejected from further consideration due to urban development adjacent to the site, non-conforming zoning and major physical problems (poor soils and numerous springs) which would be very difficult and expensive to correct. Concepts and cost estimates for preparing and operating the Wintermutes Corner and Iverson Road locations as sanitary landfills were developed.

The Iverson Road location was dropped from further consideration as a rural sanitary landfill because only a small portion of the site could be developed and groundwater movement through the site was such that there would be significant difficulties in operating an environmentally satisfactory landfill.

The Wintermutes Corner and Cathcart locations were extensively investigated. This investigation included subsurface soils and groundwater studies, preliminary site engineering and layout, preliminary definition of operating procedures and preliminary cost estimates. As a result of the feasibility study, the Wintermutes location was dropped from further consideration due to high cost of keeping groundwater from flowing into the fill and high land cost.

In addition, the upgrading and continued use of the Lake Stevens landfill was considered as an alternative to the proposed location. Items of concern included the availability of suitable cover material, the conditions of access roads, the availability of a suitable on-site buffer and the impact of past operations upon the development of proper environmental control facilities.

Although the Lake Stevens landfill has the capacity to continue as a major disposal site for at least an interim period of time, it cannot be expected to serve for an extended period. In addition, the site is not served by major arterial highways, and use of the Lake Stevens site would require the continued import of cover material. Proper operation practices would require that cover material quantities be increased over those used at present.

An adequate buffer is available along two sides of the landfill only. Adjacent properties to the south and east are not properly screened from the operation. Also, past disposal practices have prohibited the development of proper leachate controls at the site.

Although continued use would not substantially increase leachate quantities that would be generated from the landfill, some impact in this regard would occur. Proper alleviation of this problem and conformance with applicable solid waste regulations requires the termination of the Lake Stevens landfill operation.

Of the twenty locations evaluated, the proposed Cathcart site was determined to have the best combination of features necessary to construct and operate a sanitary landfill.

ALTERNATIVES WITHIN THE PROJECT

Alternative Solid Waste Disposal Methods

Alternative solid waste disposal methods, while reducing the volume of solid waste, do not replace the need for a sanitary landfill. The sanitary landfill would still be required to either receive residues generated by the various processes or as a backup in case the processes become inoperable due to mechanical failure. These methods will be discussed here, even though facilities to perform these types of waste reduction would not be located on the project site. Acceptance of wastes processed by these methods would constitute an alternative within the project.

The solid waste volume reduction methods discussed are listed below:

- Incineration
- Pyrolysis
- Recycling
- Milling
- Baling

All of these volume reduction operations would require construction of their own site facilities and would not be located at the proposed Cathcart site.

Incineration

Incineration is a process in which the organic carbon portion of solid waste is transformed into gaseous CO_2 and water through combustion. Normally, this results in a 70 to 80 percent volume reduction in domestic waste. In theory, the combustion should be complete with all organic wastes converted. In practice, combustion is not complete and as gases leave the incineration, they carry with them quantities of particulate matter, some of which contain organic carbon. Because of this, modern incinerators are equipped with additional combustion chambers in which the gases and particulates are subjected to further combustion. The gases formed in the incineration process are primarily CO_2 and steam. A number of additional gases are normally formed, including nitrous oxides, sulfur dioxide and various hydrocarbons. The presence of these gases and particulate matter carried with the gases requires that air pollution control equipment be provided in order to meet air pollution control standards.

The incinerator facility would include an area for receiving the collection trucks and transfer vehicles, large pits for storing the wastes, overhead cranes, furnaces and controls for dust and air pollution. Process water would require treatment or may be dischargeable into the municipal sewer system. The facility could have boilers for reclaiming waste heat as steam, provided that a market capable of using a fluctuating output were available.

Incinerator technology has been adequately proven, although some development work is still required on air emissions controls and corrosion of furnace walls and boilers. The minimum amount of time necessary to ready an incinerator facility for operation would be approximately four years.

The slag, ash and flyash residues from incineration (20 to 30 percent of input weight) would require land disposal with measures to prevent surface and groundwater pollution. The major advantages of incineration include the reduced weight and volume of waste for land disposal and the potential opportunity to reclaim the waste heat as energy. The main disadvantages are high cost, possible air emissions of pollutants and marketing problems with fluctuating outputs of energy.

Capital costs for an incinerator facility with heat recovery features, sized to serve the Cathcart Sanitary Landfill service area, would range from 11 to 14 million dollars. Annual operating, maintenance and amortization costs would be approximately 2.5 to 3.5 million dollars.

In addition, a sanitary landfill would be required as a disposal site for residue and as a backup for use when the incinerator suffered mechanical difficulties.

Pyrolysis

Pyrolysis is a process in which waste is subjected to high temperatures and pressures in an oxygen deficient atmosphere. This results in the organic portion of the waste being converted to chars, oils and gases which have a commercial value. The process is self-supporting once the proper temperatures and pressures are achieved. The potential for air pollution is minimized since a small volume of air is fed into the process and much of the gas is reclaimed.

The pyrolysis facility would include a receiving area for vehicles, waste storage area, processing equipment, such as shredders, screens, dryers, conveyors, pyrolysis retort and process equipment for reclaiming the ashes, oils and chars. Waste process waters would require treatment or may be dischargeable into the municipal sewer system; glass and metals can be reclaimed if mechanical separation equipment is installed.

Pyrolysis facilities are currently being constructed or are in the development stage at a number of locations in the United States, including Baltimore, Maryland and San Diego, California. However, no facilities have been in operation for long enough to fully evaluate their cost and performance. The minimum amount of time required to get a facility ready for operation would be three to four years.

A waste residue requiring land disposal would be produced. The major advantages of pyrolysis include the reduced weight and volume of waste for land disposal, and the potential opportunity to reclaim materials. The major disadvantages are high cost and lack of demonstrated performance. Estimated costs of pyrolysis are reported to be similar to those of incineration with heat recovery as steam. In addition, a sanitary landfill would be required as a disposal site for residue and as a backup system for disposing of waste in case of operational failures in the pyrolysis facility.

Recycling

The recycling of solid waste is increasingly preferred by both the general public and engineers and planners as the long-range approach to solid waste processing. It is felt that converting waste into a valuable resource would do much to reduce the disposal burden and reduce waste management costs. The term "waste recycling" covers a number of basic concepts and processes.

One concept is returning the various components of waste to manufacturers for reclaiming, such as returning waste paper to paper manufacturers and returning waste glass to glass manufacturers. Another concept is constructing a facility which converts waste into a material or materials having value, such as composting organic waste and obtaining a soil conditioner.

The recycling of general municipal solid waste has posed a number of problems. The various waste components are normally mixed during waste storage and collection, and it becomes difficult to separate each waste component for return to manufacturers. Problems have occurred in finding markets for waste materials when waste recycling has been attempted. Costs have also hurt many recycling operations since in many cases the total cost of waste recycling, including payments received for the recycled materials, have been much greater than the cost of waste disposal without processing. A number of recycling processes are being developed by various manufacturers. These processes are being implemented in a number of communities in the United States by the manufacturer under contract with the local authority responsible for solid waste disposal. Within the near future, the feasibility of these processes should be ascertainable, making it possible to determine their applicability to Snohomish County. This determination should be enhanced by a current study being conducted by the Washington State Department of Ecology in which a technology review of resource recovery systems is being developed to assist county governments. The objectives developed as a part of the Snohomish County comprehensive solid waste planning effort calls for intensive, on-going efforts to implement resource recovery in the 1977-1979 time frame.

Milling

Milling is a process in which a hammer mill or other grinding equipment is used to reduce the particle size of solid waste. The milled waste can be compacted to a higher density than unmilled solid waste and thus occupies a smaller volume in the landfill. The moisture present in normal waste is uniformally absorbed in the particles after grinding and results in a humus-like material which will not support flies or rats and is mostly odorless. Thus, the milling eliminates many of the noxious properties of the waste and has been utilized as pretreatment prior to sanitary landfilling to reduce negative impacts and improve operations. Milling also is used prior to long haul transport as a method of decreasing haul costs, or can be used as pre-processing for incinerator, pyrolysis and recycling facilities.

The milling facility would include a receiving area for collection and transport vehicles, storage, conveyers, milling equipment, dust controls, noise controls and equipment for packing the milled waste into trailers for transport to the land disposal site. The minimum time period required to get a milling transfer facility ready for operation would be approximately two years.

The milling process alone costs between one and two dollars per ton of waste processed and would be partially offset by some reduction in landfill operating cost. The milled wastes would require less compaction effort and slightly less daily earth cover than the unprocessed waste. At the Cathcart site, the annual high rainfall would require daily earth cover as in the conventional sanitary landfill operation to limit the generation of leachate. The benefits gained by milling the wastes would, therefore, be minimal in the operation of the proposed sanitary landfill at the Cathcart site.

Baling

Baling is a process in which solid waste is subjected to high pressure compaction resulting in rectangular bales of waste similar in shape to baled hay. The baled refuse has a considerable higher density than normal waste, with the density of the bales exceeding 1,700 lbs/ft^3.

The major application of baling has been prior to hauling refuse to land disposal sites. The bales can be economically placed on flatbed trucks, resulting in higher haul weights and lower transportation costs. Sanitary landfill operations are also improved as the bales can be stacked with a loader or forklift, reducing disposal costs and improving site appearance. The bales will require about two-thirds of the landfill space needed by conventional sanitary landfill.

The baling process requires large compacting equipment in order to adequately handle most types of solid waste. In smaller operations with smaller compacting equipment, the process is normally preceeded with a milling operation in order to reduce the particle size of the waste so that the smaller baling equipment can adequately handle it. The process requires substantial maintenance in order to function properly. The minimum time required to get a baling transfer station ready for operation would be approximately two years.

A baling facility would cost 1 to 1.5 million dollars to serve the proposed Cathcart Sanitary Landfill. The annual operating, maintenance and amortization cost would be $350,000 to $450,000.

Alternative Land Disposal Concepts at the Site

The major alternatives associated with preparing and operating the Cathcart site as a legal land disposal site for solid wastes include:

- o Type of wastes accepted
- o Type of vehicles received
- o Starting locations of the landfill operation
- o Final elevation and contours

Type of Wastes Accepted

A sanitary landfill can be designed and operated to handle a wide variety of solid wastes including:

- o Mixed municipal solid wastes (from residential, commercial and industrial trash sources)

- Hazardous wastes (explosives, hospital and other pathogenic wastes, toxic materials, chemicals, radioactive materials, etc.)
- Bulky wastes (tree stumps, demolition waste, large appliances, large furniture, etc.)
- Tires
- Animal carcasses

Only the mixed municipal solid wastes, small animal carcasses and bulky wastes that fit in collection or transfer containers will be disposed of at the Cathcart site under the proposed design and operating procedure.

Type of Vehicles Received

Traditionally, a wide range of vehicle types and sizes bring solid wastes to the land disposal sites. Only the collection vehicles, large trucks from private firms and transfer vehicles will be allowed to bring solid wastes to the Cathcart site under the proposed operating procedure. The rural landfills and rural transfer stations will be open to automobiles, automobiles with trailers and small trucks. This approach will reduce the traffic and eliminate litter along roads in the vicinity of the Cathcart site.

Starting Location of Landfill Operation

The sanitary landfill operation could be started at either the north or south end of the proposed fill area. The north end was selected to reduce the cost of initial site development. Starting at the south end would require a larger initial cost to install pipelines to treatment facilities at the north end for on-site runoff and leachate.

Starting at either end would have approximately equal impact on the surrounding area and the environment.

Final Elevations and Contours

The options on final elevations and contours of the landfill are constrained by fill life, future use, steepness of slopes for drainage and future maintenance and visual impact in relation to surrounding land forms.

A shallow layer (10 to 20 feet thick) of compacted waste with a top surface contour similar to existing contours would provide a very short life, would have the highest ratio of construction cost to waste tonnage capacity and would appear as a flat topped mound in the center of the existing ravine.

The final landfill form with the largest waste capacity (longest fill life) would be a high mound with a north-south ridge line and the sides sloping steeply (4 horizontal to 1 vertical) to the eastern and western buffer strips. This type of final elevation and contour would appear as a large mound in the center of the existing ravine and the steepness would limit the types of future use. Also, daily operations on the upper levels would increase the noise levels at nearby residences.

The proposed final elevations and contours will create a large flat area that slopes gently from approximately elevation 320 feet along the eastern ridge towards the diverted creek along the western side of the site. Side slopes will vary from 10 to 25 percent. This will appear as an extension of the eastern ridge and will provide areas suitable for a large number of future uses. Daily landfill operations will always be below the elevation of the eastern ridge.

CHAPTER 6

RELATIONSHIP BETWEEN LOCAL SHORT-TERM ENVIRONMENTAL USES AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Short-time environmental uses of the Cathcart site span the time period of the construction phase through the completion of the sanitary landfill operation phase. During the life of the site, the sanitary landfill will serve the urban and southern rural county residents with a place to dispose of their solid waste in a manner as environmentally safe as is presently available. Negative effects of short-term use will occur to residents who live in the general vicinity of the Cathcart site and include: traffic inconvenience, marginal change in air quality and increased noise levels. Present site wildlife will be lost or displaced.

Effects on the long-term productivity of the Cathcart site are related to the permitted land uses designated by present or future zoning. Implementation of the Cathcart Sanitary Landfill would restrict future generations from using the site for all allowable uses under present zoning regulations after site closure, since the fill areas may limit the siting of structures. However, suggested final uses of the Cathcart site are compatible with present vicinity land use patterns.

Implementation of a sanitary landfill at the Cathcart site should result in a net environmental gain for the majority of County residents. The closure of all other public disposal sites in the County, which are not capable of being operated in as an environmentally suitable manner, will result. The Cathcart sanitary landfill site is compatible with future solid waste systems now being studied. The sanitary landfill activity can be terminated or changed up to the time its full capacity has been realized. This maintains flexibility with any future changes in solid waste management practices in Snohomish County.

CHAPTER 7

IRREVERSIBLE AND IRRETRIEVABLE RESOURCE COMMITMENTS WITH THE PROPOSED ACTION

The proposed sanitary landfill will become a permanent element in land use development. The site will undergo relatively irreversible topography changes. The potential number of final uses of the site will be indefinitely altered due to settlement and gas generation. The existing wildlife habitat and associated wildlife presently at the site will be irretrievably lost. Final site uses will probably be incompatible for original wildlife types, although wildlife compatible with future uses will again be present.

APPENDIX A

AGENCIES REQUESTED TO REVIEW DRAFT

APPENDIX B

INVENTORY OF LIFE ZONE SUBCATEGORY VERTEBRATES

Following are species lists of organisms common to the life zone subcategories determined to exist at the Cathcart site. Whether the species listed actually are common is not known; what common means is not defined numerically. For example, how common the Bald Eagle is in life zone subcategory 14 is not necessarily how common it is in life zone subcategory 14 of the Cathcart site. Even though it is highly unlikely that Bald Eagles are present anywhere near the Cathcart site, Bald Eagles are still listed as vertebrates common to life zone subcategory 14 which is found on the site.

Species abundance and diversity indices were not determined at the Cathcart site; these operations give numerical data for ecosystem assessment and definition.

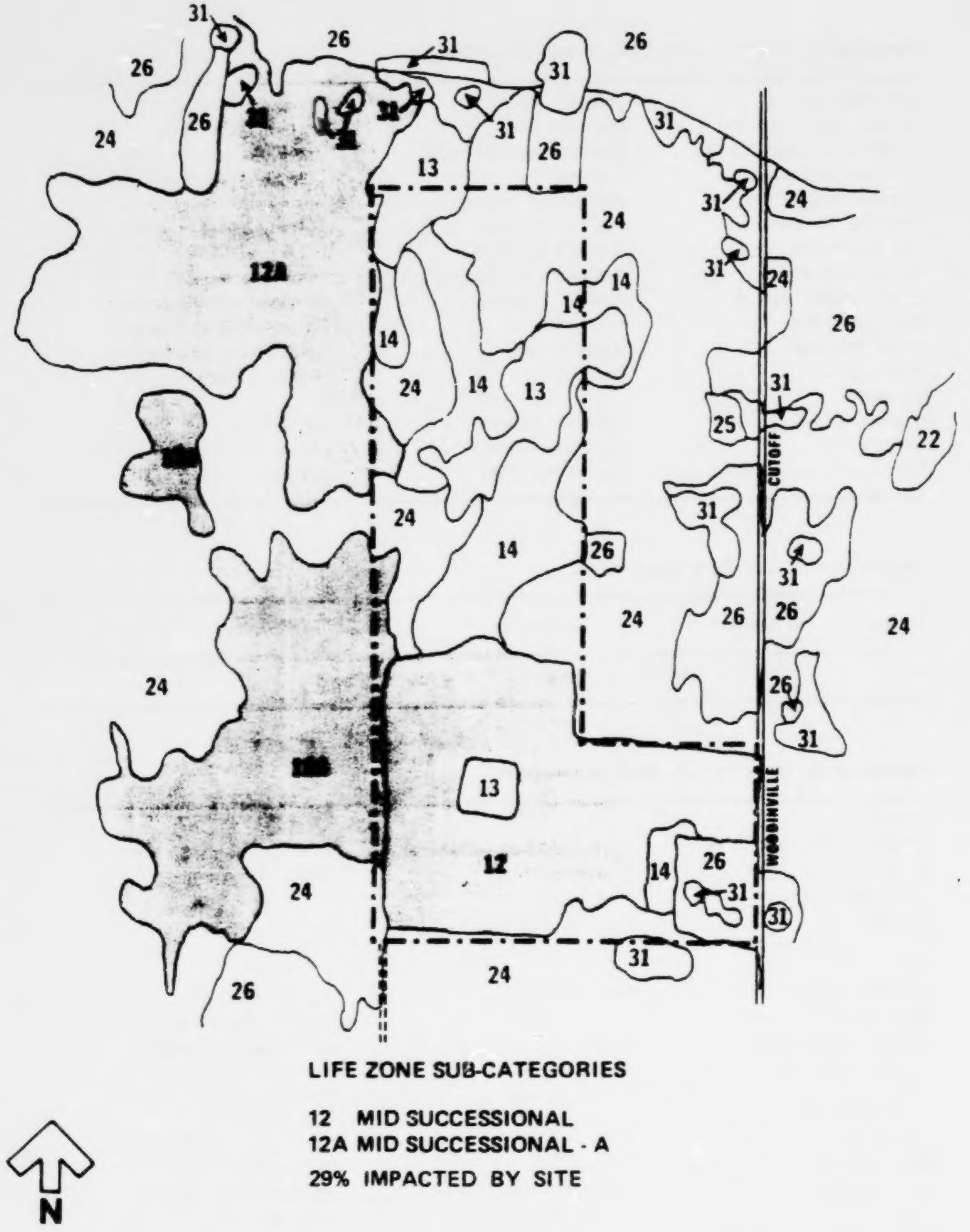
It is apparent that the remaining coniferous forest area in the predominantly deciduous forest-meadowed area at the Cathcart site is to be converted to meadowland as well.

Cathcart Site – Life Zone Subcategories

Symbol	Subcategories	Description
12	Mid-Successional	Shrub state. Deciduous brush invades herbaceous cover at fourth or fifth year. It remains until overtopped by tree saplings, usually Douglas Fir.
12A	Mid-Successional	Late shrub early tree stage. Period when saplings are topping brush. Disturbance of the site is still evident and canopy closure is incomplete, 10 to 20 years after disturbance.

Vertebrates Common To Life Zone Subcategory

Amphibia		
Northwestern Salamander	Long-Toed Salamander	Western Red-Backed Salamander
Western Toad	Pacific Tree Frog	Red-Legged Frog
Reptilia		
Northern Alligator Lizard	Rubber Snake	Northwestern Garter Snake
Common Garter Snake		
Aves		
Violet-green Swallow	California Quail	Cedar Waxwing
Tree Swallow	Ring-Necked Pheasant	Starling
Barn Swallow	House Wren	Robin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WOODINVILLE
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LIFE ZONE SUB-CATEGORIES
12 MID SUCCESSIONAL
12A MID SUCCESSIONAL - A
29% IMPACTED BY SITE
N

ECOLOGICAL ZONES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE B-1

Vertebrates Common To Life Zone Subcategory (Cont.)

Cliff Swallow
Rufous Hummingbird
Flicker, Red Shafted
Common Nighthawk
Orange-crowned Warbler
Nashville Warbler
Yellow Warbler
Myrtle Warbler
MacGillivray's Warbler
Wilson's Warbler
House Sparrow
Rock Dove
Bewick's Wren
Common Crow
Black-capped Chickadee
Bushtit
Red-winged Blackbird
Bullock's Oriole
Brewer's Blackbird
Brown-headed Cowbird
Evening Crosbeak
Purple Finch
House Finch
Pine Siskin
Varied Thrush
Hermit Thrush
Golden-crowned Kinglet
Roby-crowned Kinglet
American Goldfinch
Rufous-sided Towhee
Lincoln's Sparrow
Song Sparrow
White-Crowned Sparrow
Golden-crowned Sparrow
Golden-crowned Sparrow
Oregon Junco

Mammalia
Vagrant Shrew
Oregon Vole
Pacific Jumping Mouse
Eastern Cottontail
Mountain Beaver
Black-tailed Deer
Deer Mouse
Norway Rat
Coyote

Cathcart Site — Life Zone Subcategories

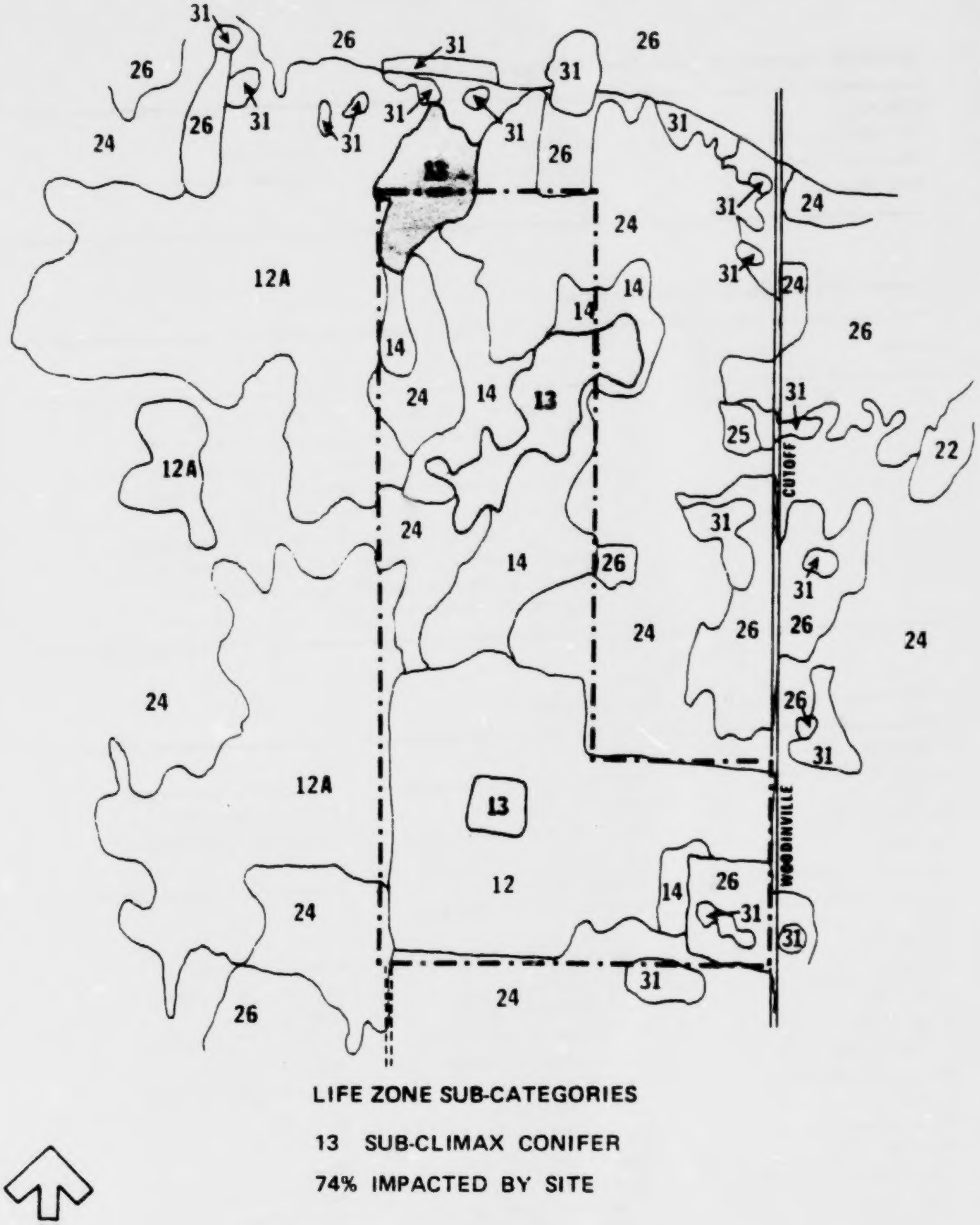
Symbol	Subcategories	Description
13	Subclimax Conifer	Douglas Fir is the tree species

Vertebrates Common To Life Zone Subcategory

Amphibia
Rough-skinned Newt
Tailed Frog
Red-legged Frog
W. Red-Backed Salamander
Western Toad
Eschsocholt's Salamander
Pacific Tree Frog

Reptilia
None Common Noted

Aves
California Quail
Rock Dove
Common Nighthawk
Rufous Hummingbird
Flicker
Violet-green Swallow
Tree Swallow
Barn Swallow
Cliff Swallow
Common Crow
Black-capped Chickadee
Red-winged Blackbird
House Wren
Bewick's Wren
Robin
Varied Thrush
Hermit Thrush
Ruby-crowned Kinglet
Cedar Waxwing
Starling
Orange-crowned Warbler
Yellow Warbler
House Sparrow
Bullick's Oriole
Brewer's Blackbird
Brown-headed Cowbird
Evening Grosbeak
Purple Finch
Pine Siskin
American Goldfinch
Rufous-sided Towhee
White-crowned Sparrow
Song Sparrow
Bushtit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WOODINVILLE
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LIFE ZONE SUB-CATEGORIES

13 SUB-CLIMAX CONIFER

74% IMPACTED BY SITE

ECOLOGICAL ZONES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE B-2

Vertebrates Common To Life Zone Subcategory (Cont.)

Mammalia

Throwbridge's Shrew
Mountain Beaver
Deer Mouse
Coast Mole
Townsend's Chipmunk
Long-Tailed Weasel
Shrew Mole
Douglas' Squirrel

Cathcart Site – Life Zone Subcategories

Symbol	Subcategories	Description
14	Sub Climax	After some field work in the planning area, many areas were determined to be in this mixed state, especially in the lowland areas adjacent to urbanized areas. In these areas conifer plantings have not been extensive and there are many stands of mixed Douglas Fir, Hemlock, Broadleaf Maple, Alder, and Western Red Cedar. These are natural successional growth areas that have not reached the climax stage yet.

Vertebrates Common To Life Zone Subcategory

Amphibia

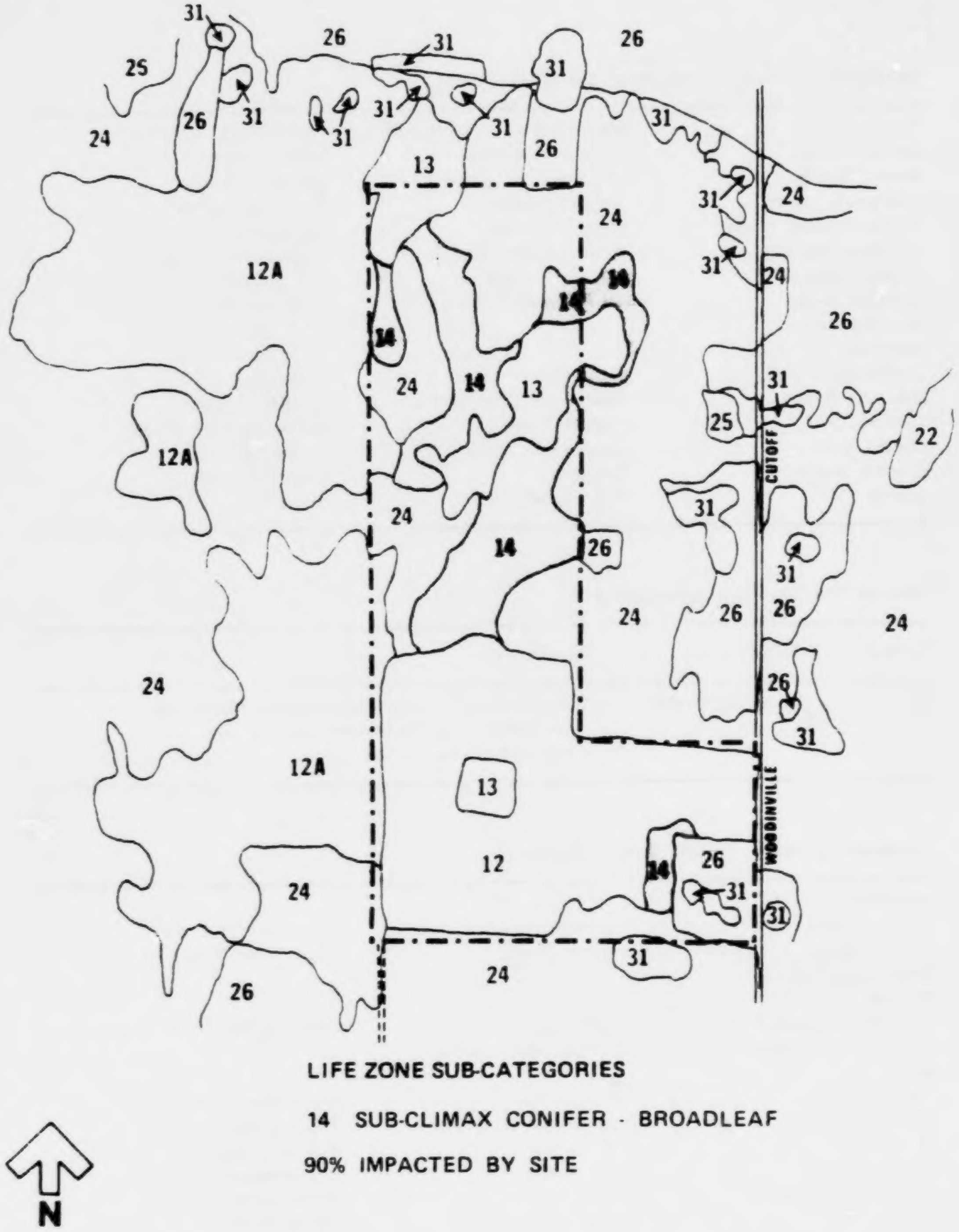
Rough-skinned Newt
Tailed Frog
Red-legged Frog
W. Red-Backed Salamander
Western Toad
Northwestern Salamander
Eschscholt's Salamander
Pacific Tree Frog
Long-toed Salamander

Reptilia

Northern Alligator Lizard
Western Garter Snake
Rubber Snake
Common Garter Snake
Northwestern Garter Snake

Aves

Cooper's Hawk
Red-tailed Hawk
Bald Eagle
Blue Grouse
Ruffed Grouse
Band-tailed Pigeon
Screech Owl
Great-horned Owl
Saw-whet Owl
Vaux's Swift
House Wren
Winter Wren
Bewick's Wren
Orange-crowned Warbler
Yellow Warbler
Rufous Hummingbird
Flicker-red Shafted
Yellow-bellied Sapsucker
Hairy Woodpecker
Downy Woodpecker
Hammond's Flycatcher
Western Wood Pewee
Olive-sided Flycatcher
Violet-green Swallow
Tree Swallow
Audubon's Warbler
Evening Grosbeak
Rufous-sided Towee
Pine Siskin
American Goldfinch
Red Crossbill
Rough-winged Swallow
Gray Jay
Stellar's Jay
Raven
Common Crow
Black-capped Chickadee
Chestnut-backed Chickadee
Bushtit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LIFE ZONE SUB-CATEGORIES
14 SUB-CLIMAX CONIFER - BROADLEAF
90% IMPACTED BY SITE
N

ECOLOGICAL ZONES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE B-3

Vertebrates Common To Life Zone Subcategory (Cont.)

Robin
Varied Thrush
Hermit Thrush
Swainson's Thrush
Golden-crowned Kinglet
Ruby-crowned Kinglet
Solitary Vireo
Red-eyed Vireo
Warbling Vireo
Black-throated Gray Warbler
Townshend's Warbler
McGillivray's Warbler
Wilson's Warbler
Bullock's Oriole
Brown-headed Cowbird
Western Tanager
Black-headed Grosbeak
Red-breasted Nuthatch
Brown Creeper
Oregon Junco
Chipping Sparrow
White-crowned Sparrow
Golden-crowned Sparrow
Fox Sparrow
Song Sparrow

Mammalia

Trowbridge's Shrew
Mountain Beaver
Deer Mouse
Oregon Vole
Spotted Skunk
Coyote
Coast Mole
Townsend's Chipmunk
Vagrant Shrew
Long-tailed Weasel
Porcupine
Red Fox
Shrew Mole
Douglas' Squirrel
Pacific Jumping Mouse
Striped Skunk
Black-tailed deer
Racoon

Cathcart Site Life Zone Subcategories

Symbol	Subcategories	Description
24	Deciduous Stands	Talus slopes with dominant Broadleaf Maple and Vine Maple, Acer Circinatum Quercus, Oak, Alder Groves: sub climax varian

Vertebrates Common To Life Zone Subcategory

Amphibia

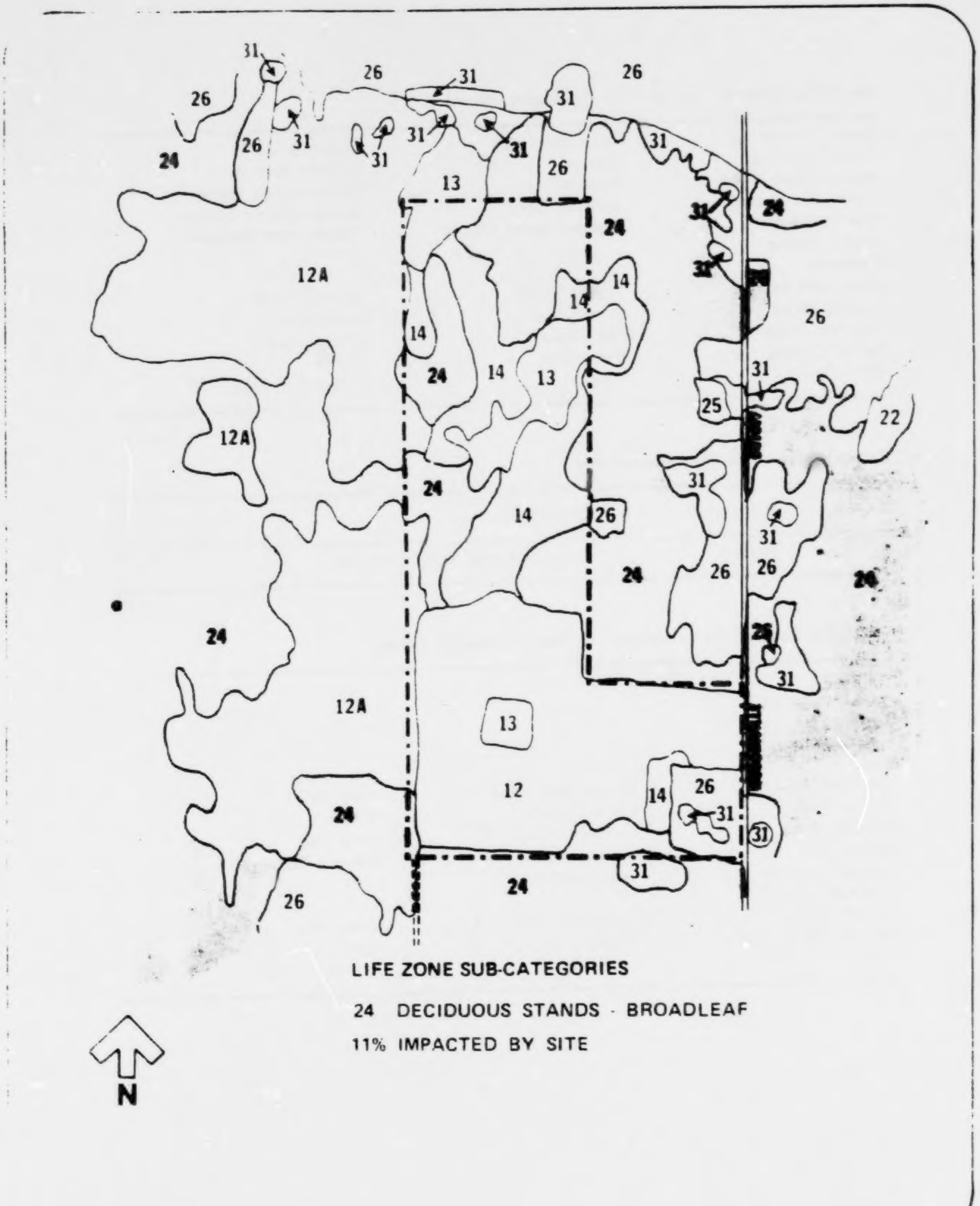
Rough-skinned Newt
W. Red-backed Salamander
Red-legged Frog
Northwestern Salamander
Western Toad
Long-toed Salamander
Pacific Tree Frog

Reptilia

Northern Alligator Lizard
Western Garter Snake
Rubber Snake
Common Garter Snake
Northwestern Garter Snake

Aves

Cooper's Hawk
Red-tailed Hawk
Screech Owl
Ruffed Grouse
Rufous Hummingbird
Flicker
Yellow-bellied Sapsucker
Common Crow
Black-capped Chickadee
Bushtit
House Wren
Robin
Bewick's Wren
Golden-crowned Kinglet
McGilivray's Warbler
Wilson's Warbler
Bullock's Oriole
Brown-headed Cowbird
Black-headed Grosbeak
Purple Finch
Pine Siskin



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LIFE ZONE SUB-CATEGORIES
24 DECIDUOUS STANDS · BROADLEAF
11% IMPACTED BY SITE
N

ECOLOGICAL ZONES

ATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE B-4

Vertebrates Common To Life Zone Subcategory (Cont.)

Downy Woodpecker
Traill's Flycathcer
Western Wood Pewee
Violet-green Swallow
Tree Swallow
Yellow Warbler
Cedar Waxwing
Starling
Rey-eyed Vireo
Warbling Vireo
Orange-crowned Warbler
Oregon Junco
Chipping Sparrow
White-crowned Sparrow
Golden-crowned Sparrow
Rough-winged Swallow

Mammalia

Short-tailed Weasel
Vagrant Shrew
Mountain Beaver
Pacific Jumping Mouse
Black Bear
Striped Skunk
Shrew Mole
Deer Mouse
Black-tailed Deer
Racoon
Spotted Skunk
Coast Mole
Oregon Vole
Coyote
Long-tailed Weasel

Cathcart Site — Life Zone Subcategories

Symbol	Subcategories	Description
26	Meadow	Prairies, pastures, golf courses, etc.

Vertebrates Common To Subcategory 14 Percent Impacted By Site

Amphibia

None Detected

Reptilia

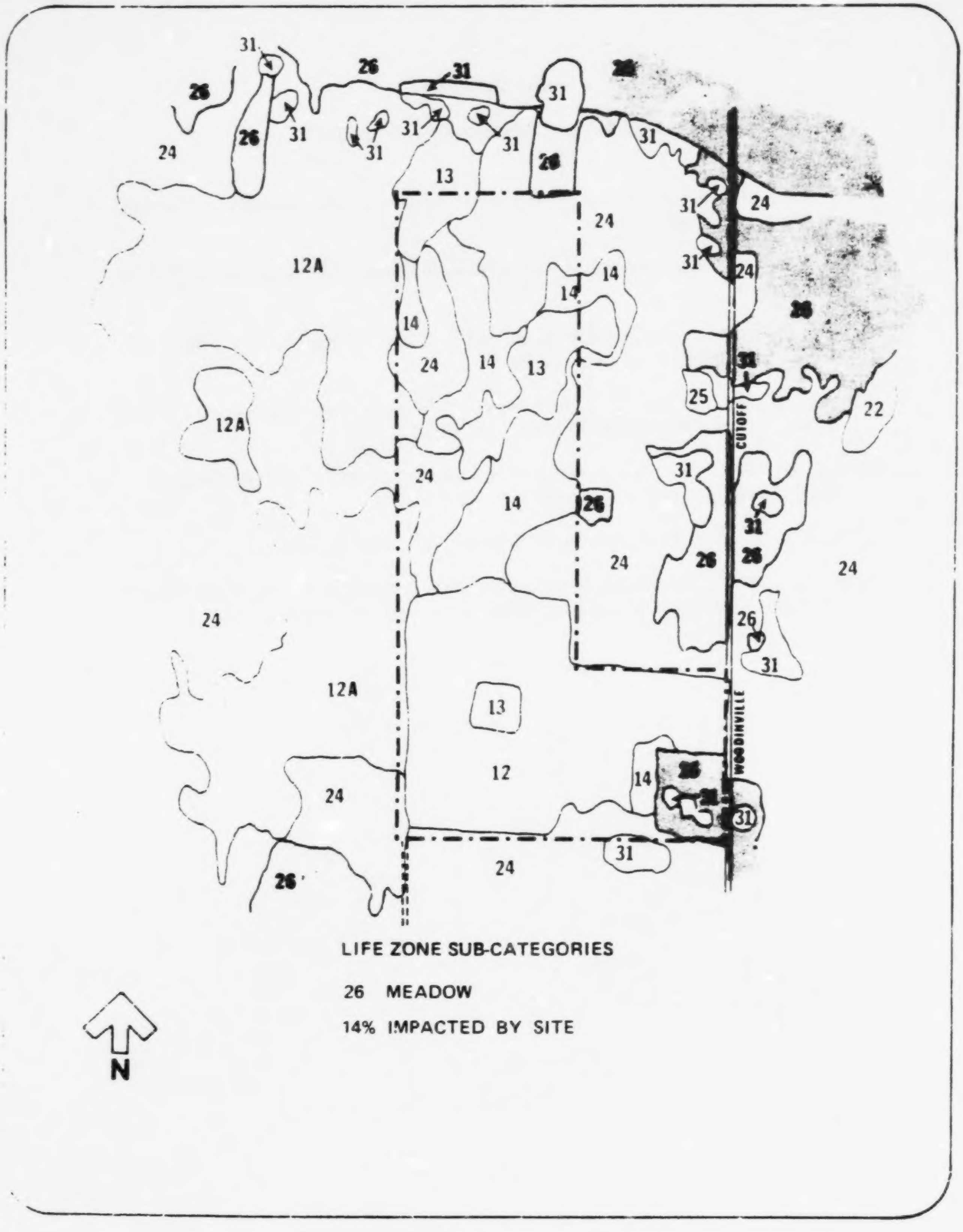
None Detected

Aves

Red-tailed Hawk
Sparrow Hawk
Common Snipe
Starling
Savannah Sparrow
Rough-legged Hawk
Sparrow Hawk
Short-eared Owl
Western Meadowlark
Vesper Sparrow
Marsh Hawk
Killdeer
Water Pipit
Brewer's Blackbird

Mammalia

Vagrant Shrew
Mazama Pocket Gopher
Coyote
Townsend's Mole
Oregon Vole
Striped Skunk
Coast Mole
Pacific Jumping Mouse
Townsend's Vole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LIFE ZONE SUB-CATEGORIES

26 MEADOW

14% IMPACTED BY SITE

ECOLOGICAL ZONES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE B-5

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Appendix "B"

Final Environmental Impact Statement

Cathcart Sanitary Landfill

Snohomish County
Public Works Department

STEVENS, THOMPSON & RUNYAN, INC.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Submitted by

Snohomish County Department of Public Works
Solid Waste Division
County Administration Building
Everett, Washington 98201

July, 1975

Sponsor:

Snohomish County Department of Public Works, Solid Waste Division.

Type of Proposed Action:

Construction and operation of a sanitary landfill.

Official Title of Proposed Action and Summary of the Proposed Action:

Cathcart Sanitary Landfill.

The Snohomish County Department of Public Works proposes to establish a sanitary landfill on 56 acres of a 200-acre parcel located between the Lowell-Cathcart Road and 152nd Street S. W. The proposal is a response to the prescriptions of the Department of Ecology's Minimum Functional Standards for Solid Waste Handling and the Snohomish Health District Regulations Governing Solid Waste Handling. The proposal is also in response to the recommendations of the Snohomish County Comprehensive Solid Waste Management Plan, which cited the construction of an adequate solid waste disposal site as one of the County's highest environmental priorities.

The proposed site is sufficient to accommodate solid waste from a system of drop boxes and transfer stations for approximately eight to ten years. If additional fill areas are utilized, or if the 56-acre site is filled to higher elevations, site capacity will approach, but not exceed, 20 years.

Summary of Environmental Impacts:

Primary environmental impacts attendant with this proposal include the modification of natural topography and vegetative cover, the destruction of wildlife habitat, and the alteration of natural ground and surface water patterns. Several potential human use impacts, such as possible depreciation of land values, ambient noise level increases, and increased truck traffic levels, are also addressed. The subject document contains several proposals which mitigate the severity of the aforementioned potential impacts.

Summary of Alternatives:

Alternatives addressed within the appropriate section of this document include alternative solid waste disposal systems such as continuance of the present County disposal practices, regional rail haul disposal, alternative locations, alternative disposal methods (incineration, pyrolysis, recycling, milling, and baling), as well as alternative land disposal concepts at the proposed site.

Review Period:

All comments received by Tuesday, April 8, 1975, were included within this document.

Recipients of the Document and their Responses:

Department of Agriculture - No response received
Department of Emergency Services - No response received
Department of Commerce and Economic Development - No response received
Department of Ecology - See Appendix A - Exhibit 1
Department of Fisheries - See Appendix A - Exhibit 2
Department of Game - See Appendix A - Exhibit 3
Department of Highways - See Appendix A - Exhibit 4
Department of Natural Resources - No response received
Department of Social and Health Services - No response received
Interagency Committee for Outdoor Recreation - No response received
Parks and Recreation Commission - See Appendix A - Exhibit 5
Planning and Community Affairs Agency - No response received
Office of Program Planning and Fiscal Management - No response received
Department of Interior, Bureau of Sports, Fisheries and Wildlife - See Appendix A - Exhibit 6
Puget Sound Air Pollution Control Agency - See Appendix A - Exhibit 7
U. S. Environmental Protection Agency - See Appendix A - Exhibit 8
Snohomish County Planning Department - See Appendix A - Exhibit 9
Snohomish Health District - See Appendix A - Exhibit 10
Puget Sound Governmental Conference - No response received
Economic Development Council of Snohomish County - See Appendix A - Exhibit 11
Snohomish County Agricultural Extension Agent - No response received
Snohomish County Comprehensive Health Planning Council - No response received
U. S. Forest Service - No response received
Professor Ernst Gayden - See Appendix A - Exhibit 12
Mr. Robert Scott - No response received
Snohomish Public Library - No response received
Everett Public Library - No response received
Washington Archeological Research Center - See Appendix A - Exhibit 13

Comments Received Too Late for Inclusion in Text:

Mr. Jon R. Stack, P.E.

Summary of Comments and Responses to Comments:

With the exception of Professor Gayden, no respondent found the Draft EIS to be factually inadequate or seriously misleading. As a matter of fact, the U.S. Environmental Protection Agency said, "We find that this is the most complete draft statement concerning a Sanitary Landfill which we have reviewed. All potential problems entailed in the construction and maintenance of a Sanitary Landfill are addressed in detail."

The U. S. Department of the Interior - Fish and Wildlife Service felt that, "Overall, it is a well written document, and reflects an understanding of many biological principles." The Service did express concern regarding the potential destruction of wetland areas. The principal wetland areas of the site (as defined in the Fish and Wildlife Service Circular 39) are those in the southern and southwestern portions of the landfill site. These areas are not scheduled for filling in this application; and as much as possible will be left intact. Additional wetland will be created by the construction of the offsite runoff "Surge Pond." This pond will be approximately 1 acre in area and will be available for wildlife occupancy.

The Washington State Department of Game also showed concern about the wildlife impact. We pointed out that due to the unsuitability of finished landfills for buildings, the final use of the site will be one of "open space."

This will guarantee a sanctuary in perpetuity for wildlife in an area which may ultimately be completely developed. In closing, the Department of Game said, "We feel the approach you have taken to assessment of wildlife conditions in this impact statement is commendable. Categorization and inventory of site lands by ecologic zones provides the reader with a good understanding of the site . . ."

The Washington State Parks and Recreation Commission felt that we did not adequately identify significant archeological or historical sites in the impact area. The Commission did say that no known historical sites will be impacted by the proposed action. Additionally, we have written Dr. Harvey Rice, Washington State University Archeologist to determine if any known archeological sites are located such that harm may be incurred if the project goes ahead.

While the Washington State Department of Fisheries was concerned about the discharge of treated leachate from the Leachate Treatment Plant, they were " . . . favorably impressed by the proposed leachate and runoff treatment facilities and the proposed monitoring of the unnamed creek both above and below the fill." Since concern regarding the leachate treatment plant was shown by other agencies also, such as the Department of Ecology, a more in-depth discussion will appear in this, the Final EIS.

The Washington State Department of Highways and the Department of Ecology point out that a truck climbing lane may be needed on SR9 sooner than planned. We agree, and will work with the State Department of Highways to see if scheduled construction can be expedited.

Professor Gayden's letter, which appears as Exhibit 12, cannot be summarized, but must be addressed point by point. This has been done in the body of this document. Each of his comments have been considered and those of a substantive nature were responded to.

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INTRODUCTION

The purpose of this statement is to analyze and comment on the environmental impact of the proposed construction and operation of the Cathcart Sanitary Landfill located in the southwestern portion of Snohomish County.

In accordance with the State of Washington Environmental Policy Act of 1971, consideration must be given to the effect on the productive and enjoyable harmony between man and his environment, to evaluate possible environmental damage, and to determine the impact on the health and welfare of man. The statement further considers the impact the project will have on the state policy to "(1) foster and promote the general welfare; (2) create and maintain conditions under which man can exist in productive harmony, and (3) fulfill the social, economic, and other requirements of present and future generations of Washington citizens."

Snohomish County, the sponsoring agency, authorized Stevens, Thompson & Runyan, Inc. to assist in preparing this Environmental Impact Statement. Northwest Environmental Technology Laboratories, Inc. was employed by Stevens, Thompson & Runyan, Inc. to assess the impact of the project on noise levels. Geolabs-Washington, Inc. was employed by Stevens, Thompson & Runyan, Inc. to provide information on the geological, soil, and hydrological aspects of the project site. John Garcia, a graduate student in the Department of Forestry, University of Washington, supplied information on the vegetation and wildlife aspects of the project site.

This Final Environmental Impact Statement and the findings contained herein are the combined efforts of the above-named organizations as well as agencies and individuals who reviewed the Draft Environmental Impact Statement, and represent an interdisciplinary approach to the decisions relating to the recommended design and operation for the project. The report which follows identifies methods and procedures which assure that unquantified environmental amenities and values within the community affected by the project have been given appropriate consideration in the decision-making process along with economic and technical consideration.

CHAPTER 1

THE PROPOSED ACTION

PURPOSE AND JUSTIFICATION

Solid waste generated in Snohomish County is presently disposed of at twelve separate solid waste disposal sites within the county. Five of these disposal sites are owned and operated by Snohomish County, while the remaining seven disposal sites are owned and operated by various cities and towns. These existing disposal operations do not meet the Washington Department of Ecology regulations relating to Minimum Functional Standards for Solid Waste Handling and the Snohomish Health District Regulations Governing Solid Waste Handling and must be terminated or modified. The solid waste disposal site operated by the City of Everett, which receives the largest portion of the area's waste, will reach capacity within the year and operation must be terminated at that time. A sanitary landfill capable of meeting state and local regulations and modern environmental standards is thus required to meet the solid waste disposal needs of Snohomish County residents and businesses. The Interim Report, Solid Waste Management Planning, completed in 1971, was developed as a part of the HUD-funded WASH-USE-1 program and addressed the county's solid waste management problems. One of the study's recommendations of highest priority was the immediate construction and operation of sanitary landfill facilities capable of meeting all health and environmental requirements for the county.

The Interim Report and subsequent information, developed as a part of the overall solid waste planning effort, have been subjected to numerous citizen and public agency reviews. In 1971, the Snohomish County Solid Waste Steering Committee and the Snohomish County Association of Cities and Towns passed resolutions supporting the Interim Plan and recommended that the Board of County Commissioners take several specific steps toward its implementation. The Commissioners have acted in accordance with these resolutions.

Snohomish County recently completed work on the Comprehensive Solid Waste Management Plan required under the State Solid Waste Management Act of 1969. Implementation of the landfill portion of the plan preceded the plan's final approval because of the critical disposal problems in the county. This was the reason for the Interim Report. Continued review of the final plan's development has resulted in a number of actions related to its ultimate approval, however.

In late 1973, a summary of the study's findings was distributed to the Solid Waste Management Steering Committee. In early 1974, the Committee passed a resolution supporting the Comprehensive Solid Waste Management Plan as proposed; the committee also encouraged all of the cities and towns of the county to support the plan. The Snohomish County Association of Cities and Towns responded to this recommendation by passing a resolution supporting the plan as proposed.

The entire study process has identified a need for new disposal sites in order to solve short-term site life, environmental, and public health problems. In addition, the Washington Department of Ecology has noted the need to provide disposal sites to comply with state laws and the Washington Administrative Code. For example, WAC 173-301-354 provides as follows:

> Satisfactory emergency disposal of input solid waste shall be provided in the event of a major incinerator plant breakdown.

The Department's position, as stated by letter dated March 13, 1974, is as follows:

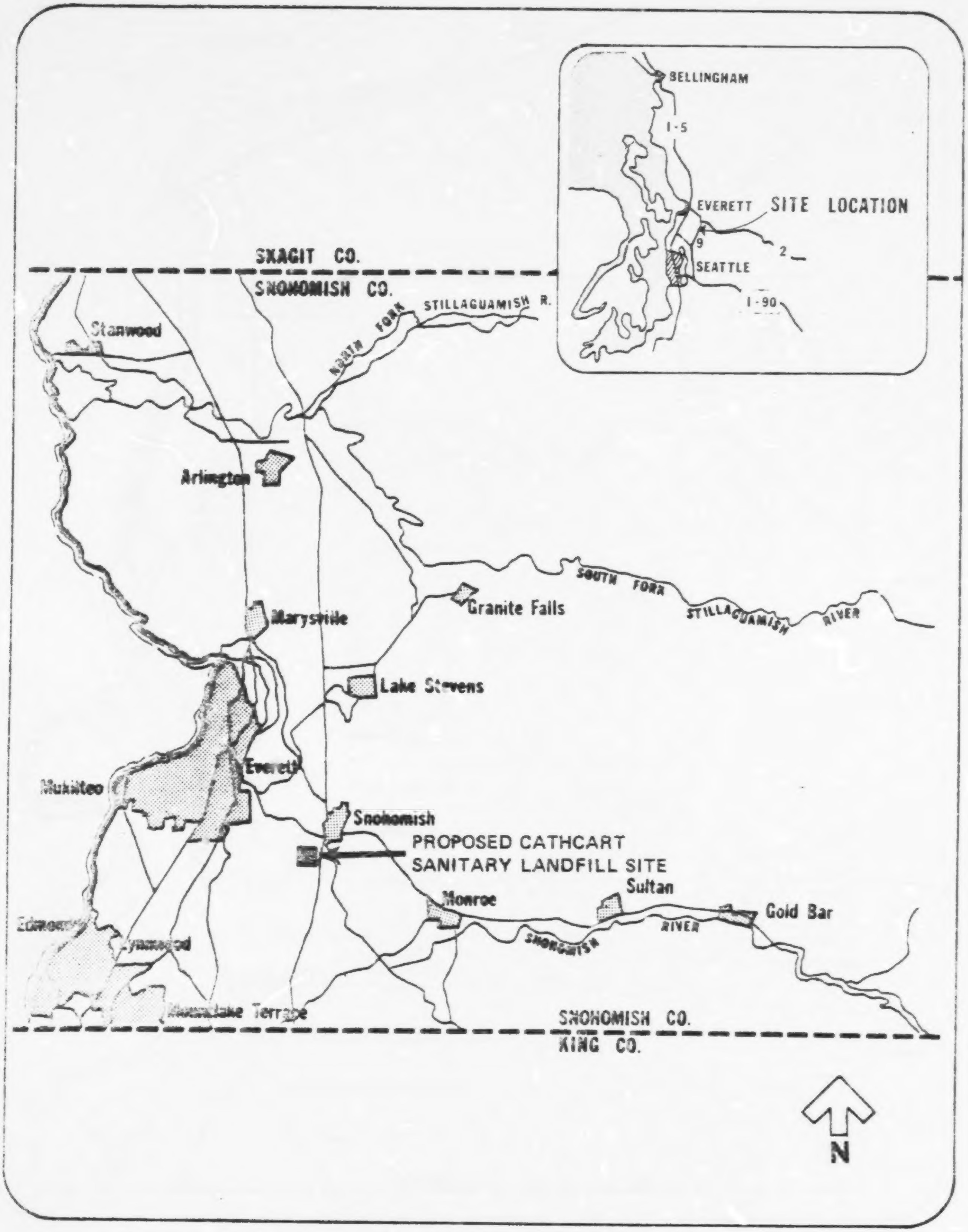
> Although we do not wish to discourage incinerator or resource recovery systems, it should be recognized that some land disposal is necessary should such options be employed. Land disposal is necessary to:
>
> 1. Provide for the disposal of incinerator residue.
> 2. Provide emergency backup for incinerators and resource recovery systems.
> 3. Provide disposal for bulky, industrial, and other solid waste which cannot be incinerated or recycled under current technology.

The U. S. Environmental Protection Agency concurs with this position. The proposed Cathcart Sanitary Landfill would serve to implement the recommendations of the entire planning study effort, it would respond to the requirements of state law and proper environmental policy, and it would meet the need to replace rapidly depleting disposal sites for the county.

PROJECT LOCATION

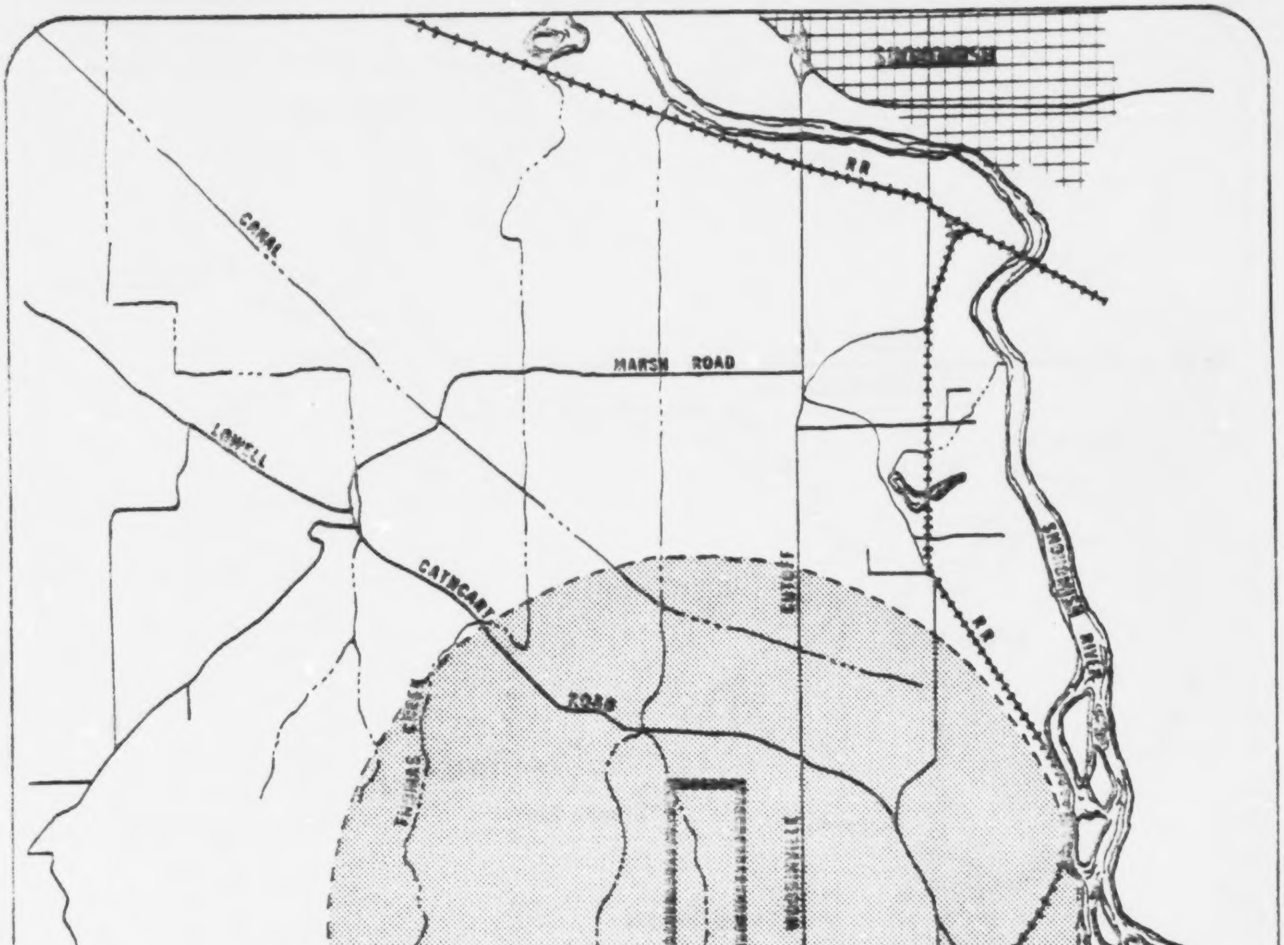
The proposed Cathcart Sanitary Landfill site is located, as shown on Figures 1-1 and 1-2, south of the City of Snohomish. State Route 9 (Woodinville Cutoff) runs parallel to a portion of the site on the east, while the site lies roughly between the Lowell-Cathcart Road (Bluff Road) and 152nd Street S. E. on the north and south, respectively.

The site is located in the west half of the west half and in the southeast quarter of the southwest quarter of Section 36, Township 28 North, Range 5 East. At present the entire 200 acres is owned by the state and administered by the Department of Natural Resources. This land is held in trust by the Department of Natural Resources for the economic benefit of the schools of the State of Washington. The Department of Public Works


BELLINGHAM
I-5
EVERETT
SITE LOCATION
9
2
SEATTLE
I-90
SKAGIT CO.
SNOHOMISH CO.
NORTH FORK STILLAGUAMISH R.
Stanwood
Arlington
SOUTH FORK STILLAGUAMISH RIVER
Granite Falls
Marysville
Lake Stevens
Everett
Mukilteo
Snohomish
PROPOSED CATHCART SANITARY LANDFILL SITE
Monroe
Sultan
Gold Bar
SNOHOMISH RIVER
Edmonds
Lynnwood
Mountlake Terrace
SNOHOMISH CO.
KING CO.
N

SITE LOCATION & VICINITY

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-1


SNOHOMISH
RR
CANAL
MARSH ROAD
LOWELL
CATHCART
ROAD
THOMAS CREEK
ELLIOTT
SNOHOMISH RIVER
RR
WOODINVILLE
BROADWAY
152nd ST. SE
VIRGINIA ST.
156TH ST. SE
PRIMARY IMPACT
AREA BOUNDARY
ENCLOSES AREA
MOST LIKELY TO
FEEL DIRECT
IMPACT FROM
PROPOSED ACTION
UNION ST.
CATHCART
164 TH ST. SE
RR
N
VINE ST.
CLEARVIEW

PRIMARY IMPACT AREA

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-2

intends to lease this land from the Department of Natural Resources, thus providing income for school use which otherwise would have been nonexistent.

PRIMARY IMPACT AREA

Figure 1-2 shows the relationship of the Cathcart site within the primary impact area. Land within the boundary encompasses the areas which are most directly affected by the construction and operation of the sanitary landfill in the region. This does not imply that all areas within the designated impact area will be affected equally. Direct impact will vary depending on natural conditions (e.g. topography, drainage) and man-made conditions (e.g. location of residences, noise, traffic) within the area. The primary impact boundary line represents a line drawn approximately one mile or more in radius from the Cathcart Sanitary Landfill site. This distance is assumed to include most people and property which would feel varying degrees of direct impact from the proposed action. This same distance was also used as a guide to disseminate and solicit information from residents. Indirect impacts both beneficial and negative will be felt beyond the primary impact area throughout the county.

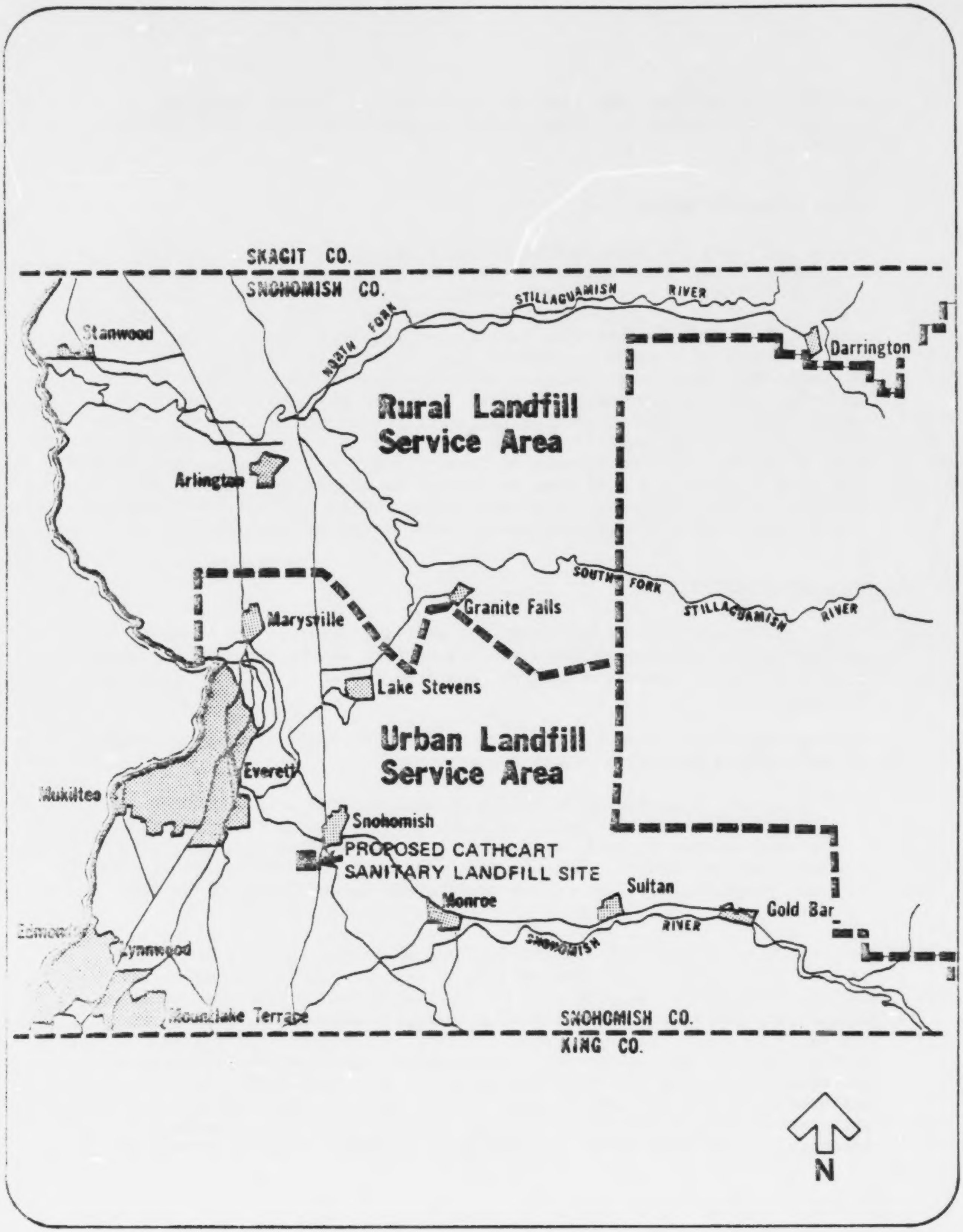
PROJECT DESCRIPTION

The Cathcart site will be utilized as a sanitary landfill for disposal of residential and commercial solid waste generated in the urban and southern rural portions of Snohomish County. The area served by the site is shown in Figure 1-3.

The sanitary landfill method for land disposal of solid waste is defined by the American Society of Civil Engineers as:

> "A method of disposing of refuse on land without creating nuisances or hazards to public health or safety, by utilizing the principles of engineering to confine the refuse to the smallest practical volume, and to cover it with a layer of earth at the conclusion of each day's operation, or at such more frequent intervals as may be necessary."

The objective of the sanitary landfill method is to eliminate the public health, environmental, and aesthetic problems associated with open dumps and modified landfills. The site is selected after careful consideration of its location relative to community needs (accessibility, zoning, haul routes, site life, and future use), physical characteristics required for a good operation (soils, geology, groundwater, surfacewater, topography, and vegetation), and the potential impact on site neighbors. By proper engineering design and careful operation, a sanitary landfill will prevent surface and groundwater pollution, will prevent migration of gases into potentially hazardous areas, and will control odors, feeding animals and


SKAGIT CO.
SNOHOMISH CO.
STILLAGUAMISH RIVER
NORTH FORK
Stanwood
Darrington
Rural Landfill Service Area
Arlington
SOUTH FORK STILLAGUAMISH RIVER
Granite Falls
Marysville
Lake Stevens
Urban Landfill Service Area
Everett
Mukilteo
Snohomish
PROPOSED CATHCART SANITARY LANDFILL SITE
Sultan
Monroe
Gold Bar
SNOHOMISH RIVER
Edmonds
Lynnwood
Mountlake Terrace
SNOHOMISH CO.
KING CO.
N

SERVICE AREA

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-3

wildlife, rodents, flies, windblown litter, dust, and other nuisances. Burning of garbage and trash is not allowed and landfill construction and operating procedures minimize the chances and spreading of accidental fires. Many of these controls are achieved through constructing daily cells of compacted solid waste and the daily earth cover as illustrated in Figure 1-4.

Buffer strips of natural or planted vegetation, planned on-site traffic routing, and staged development of the landfill site minimize the noise and visual impacts on neighbors. Heavy equipment operating on the site are equipped with noise suppressant devices. The vehicular unloading and landfill operations are limited to a confined area on the site at any one time. This keeps the rest of the site clean and free of nuisance conditions. Staged development prevents overall vegetation removal. Vegetation is removed only from areas currently being filled and revegetation is begun immediately after an area is completely filled. This retains the maximum amount of buffer for visual protecton and reduces erosion and dust problems.

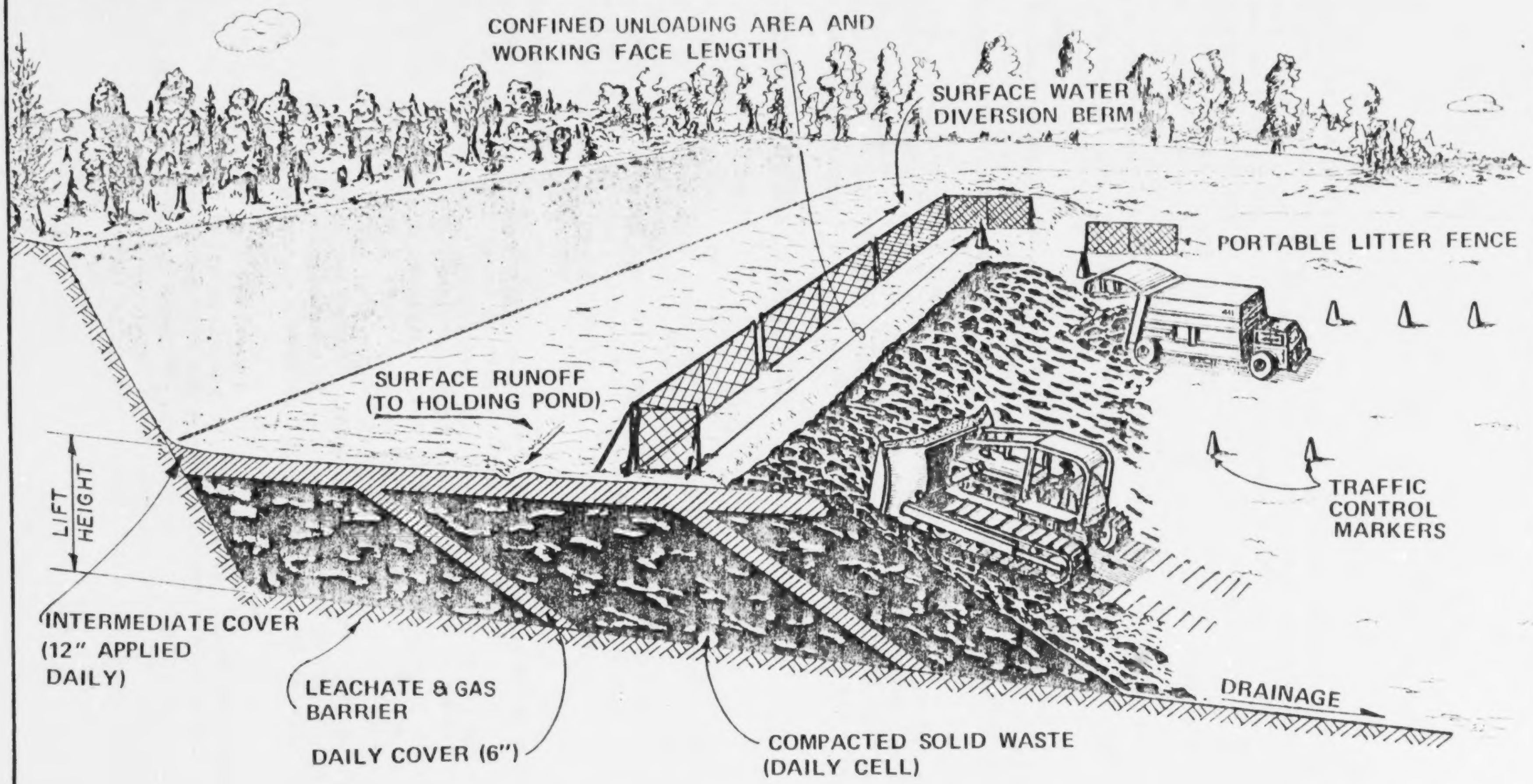
A sanitary landfill has a future use plan that identifies the necessary elevations and contours required for future uses, the methods for closing the site, and maintenance and operation of environmental control features after the site is closed for solid waste disposal. Some future uses of landfill sites are open space and recreation areas such as parks, ball fields, and golf courses.

PROPOSED USE OF THE CATHCART SITE

The sanitary landfill must be operated in accordance with the Snohomish Health District Regulations Governing Solid Waste Handling and the Washington Department of Ecology Regulations Relating to Minimum Functional Standards for Solid Waste Handling (WAC 173-301). These regulations define the operation of the sanitary landfill.

Hazardous wastes (as defined in WAC 173-301) will not be accepted at the site and small public vehicles (automobiles and pickup trucks) will not be allowed to enter the site, to reduce the traffic impact in the neighborhood.

Development of the sanitary landfill is not viewed as a final solution to the waste disposal needs of Snohomish County. The county is actively involved in the study of recycling as well as other waste processing systems through the efforts of the Snohomish County Solid Waste Management Steering Committee. For this reason, one of the major design criteria utilized for the landfill is that the facility must be flexible to allow it to become part of any solid waste management system developed in the near future. Initial site development will be kept to a minimum to achieve this goal, leaving as much of the site in an undisturbed condition as is possible at any one time.


CONFINED UNLOADING AREA AND WORKING FACE LENGTH
SURFACE WATER DIVERSION BERM
PORTABLE LITTER FENCE
SURFACE RUNOFF (TO HOLDING POND)
LIFT HEIGHT
TRAFFIC CONTROL MARKERS
INTERMEDIATE COVER (12" APPLIED DAILY)
LEACHATE & GAS BARRIER
DAILY COVER (6")
COMPACTED SOLID WASTE (DAILY CELL)
DRAINAGE

METHOD OF SANITARY LANDFILLING

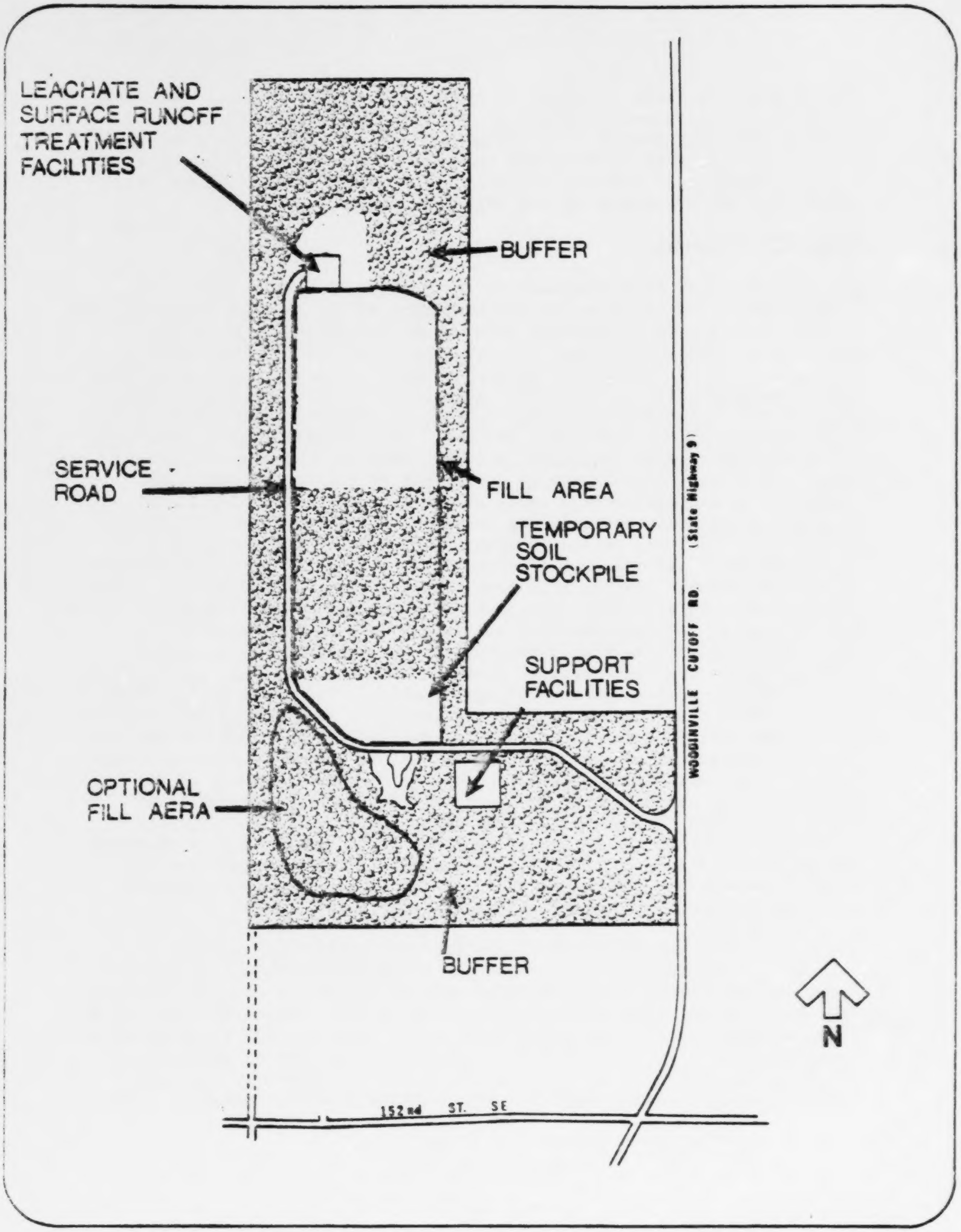
CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-4

The proposed Cathcart site will be developed in three phases. The first phase will include preparing the site for the operation of a sanitary landfill and will consist of constructing necessary facilities and performing initial site clearing and excavation. The second phase will consist of operating a sanitary landfill at the site. The third and final phase will include preparing the site for future use.

Phase I - Site Preparation

The initial phase of development at the 200-acre Cathcart site will include preparing the site for the operation of the sanitary landfill. An access road will be constructed from State Highway SR9 as shown in Figure 1-5. The intermittent creek, which flows through the center of the site, will be diverted to an open channel which will be located near the western boundary of the site. Relocation of this creek to an open channel will require a Hydraulics Project Approval from the Department of Fisheries and the Department of Game. The channel will be constructed of natural earth where possible, but will be lined with rock in areas where the stream velocity may be sufficient to create erosion. The channel will contain storage ponds at the southern point of the diversion and at periodic points along the channel to ensure that stormwater runoff flows will not create flooding downstream of the site. An area of approximately 54 acres will be initially cleared to allow construction of site facilities and the fill area. Approximately 438,000 cubic yards of earth will be excavated from 21 acres of area in the northern portion of the fill area. Average depth of excavation will be approximately 13 feet. The northern half will be prepared for receiving solid wastes by constructing a leachate barrier, leachate collection system, gas controls and an on-site surface water drainage pipeline. Excavated soil will be stockpiled in the southern half of the excavated area and at the southern end of the fill area for future use as cover material during the sanitary landfill operation. The excavated area will be sloped to allow drainage towards a perforated pipe placed across the northern boundary of the excavation for collection of any leachate (rainwater contaminated by percolating down through the wastes) generated by the fill. Surface runoff from outside the excavated area and filled areas will be diverted around the fill area to the drainage channel. An impervious material will be used on the bottom and sides of the excavated area to prevent leachate movement out of the fill area prior to collection.

Facilities for treating leachate and surface runoff from the fill area will be constructed to the north of the waste disposal area. Leachate treatment facilities will include an aerated lagoon, a physical-chemical treatment system, chlorine contact chamber, a dechlorination unit, and a pH adjustment unit. Treated and disinfected leachate will be discharged into the on-site surface runoff settling basin for further treatment. The settling basin will be constructed in the area north of the waste disposal area to remove sediments from surface runoff originating from


LEACHATE AND SURFACE RUNOFF TREATMENT FACILITIES
BUFFER
SERVICE ROAD
FILL AREA
TEMPORARY SOIL STOCKPILE
SUPPORT FACILITIES
OPTIONAL FILL AERA
BUFFER
WOODINVILLE CUTOFF RD. (State Highway 9)
152nd ST. SE
N

SITE LAYOUT

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-5

the fill area before the runoff is monitored and discharged into the creek.

Several support facilities will be located at the site. A small scale house will be placed adjacent to the access road in the southeastern portion of the site to weigh incoming waste loads. A facility will be placed in the same general area to serve the operating personnel and will contain an office, employee lunchroom, and sanitation facilities. A truck washing facility will be placed in the same general area for external cleaning of vehicles that dump waste. This will assure that litter and mud are not spread on public roads as the vehicles leave the site. Water from the truck washing facility will be discharged into the on-site surface drainage channel or into the septic tank/drainfield serving the gate house and associated buildings.

The fill area will be buffered around its perimeter as indicated in Figure 1-5. The majority of the north 40-acre portion of the site will be left in its natural state. This will separate waste disposal areas from the bluff portion of the site and will also buffer planned future developments to the north (e.g. the 132nd Street extension). The majority of the southeast 40-acre portion will also be reserved as a buffer area. This will protect Highway 9 from visual contact of the site and will also keep landfill operations to the west of the hill along the east boundary.

The most critical site boundary, from the standpoint of noise and visual contact, is the southern boundary. Therefore, the proposed action, at this time, reserves potential developments for the southern portion of the site for later approval. This will provide for a monitoring program during first stage operations to document buffer needs for the southern portion of the site. It will also provide for a review of the status of the site development with respect to the potential application of resource recovery systems.

Buffer areas of approximately 140 feet width and 180 feet width will be developed along the western and eastern site boundaries, respectively. These buffer areas will be left in their natural state where possible, but will include an additional planting of trees in areas of sparse vegetation. The access road and creek diversion channel will increase the western buffer area to approximately 215 feet width. A perimeter fence will be installed around the fill area as a safety barrier and as an animal control device.

Access to the site could be provided from the existing 152nd Street S. E. or from the planned extension of 132nd Street S. E. Access from 152nd Street S. E. was eliminated from further consideration because it provided minimal space for entrance facilities, reduced the western buffer zone width, and would route collection and transfer trucks over a narrower road and past additional residences than the access route from SR9.

Access to 132nd Street S. E. could be considered when it is constructed. Access from 132nd Street S.E. location would be less desirable than from SR9 in that it would involve on-site roads with less desirable grades and would also result in the relocation of the scale facilities if the Cathcart site were already in operation.

Phase II - Sanitary Landfill Operation

Solid waste will be transported to the sanitary landfill in refuse collection vehicles and in large trucks transporting containers from the urban and rural transfer stations. The Cathcart site will be open on a five-day week basis, with the possibility of limited weekend operations depending upon waste loadings at the transfer stations. Private automobiles and light trucks will not be permitted to dump refuse at the site, thus limiting overall traffic to and from the site. The estimated daily waste and traffic loads entering the landfill over the next ten years are listed in Table 1-1.

Table 1-1

Daily Solid Waste and Traffic Loads

	SOLID WASTE		TRAFFIC	
Year	Average Week Day (tons/day)	Average Weekend Day (tons/day)	Average Week Day (trucks/day)	Average Weekend Day (trucks/day)
1975	565	145	40-50	10
1980	620	165	45-55	10
1985	685	185	50-60	12

The waste disposal operation will take place in the 56-acre fill area designated in Figure 1-5. The fill area will be developed in six stages. The first two stages (approximately 21 acres) at the northern end of the fill area will be cleared, excavated, and prepared for receiving the solid wastes as part of the initial site development phase. In turn, each stage will be filled to an elevation that limits vehicle access or to the final elevations and contours while the next stage is being cleared, excavated, and prepared. As each stage is completed to final elevation, it will receive additional final earth cover, final grading for drainage purposes, gas control and seeding with grass. Excavated earth will be used as daily cover or stockpiled for future use. Stumps, brush, and trees from the clearing operation will be burned according to prevailing open burning regulations or disposed of by sale or chipping. Estimated quantities of solid waste placed in the fill area, excavation, cover material, and cleared fill area at the end of each stage of landfill development are summarized in Table 1-2. Some excess soil left after the fill area is completed will be retained for site maintenance, and the remaining excess soil will be retained in the optional fill area (see Figure 1-5) for future use development.

The amount of time required to complete the 56-acre fill area to the final elevations and contours is estimated to be 8 to 10 years with forecasted waste loads as shown in Table 1-1. Increased landfill life would occur if future resource recovery efforts reduce the waste load, if the optional fill area were used, or if the 56-acre fill area were filled to higher elevations. A site life beyond 20 years is highly unlikely in any case.

The sanitary landfill will be developed by constructing compacted cells of the daily waste volume and covering the waste cells with compacted earth during the daily operation or at the end of each day. The uncovered working face or waste unloading area will be confined to a length of 150 feet and will be enclosed along three sides by portable litter fences.

The equipment necessary to accomplish daily landfilling operations will initially include a crawler dozer, a landfill compactor, an elevating scraper, and a water truck. Other equipment may periodically be used for land clearing and excavation.

The compacted layer of earth around each cell of wastes will reduce the amount of rainfall that infiltrates into the fill, prevent accidental fires from spreading through the fill, keep rodents, wildlife, and other animals from feeding on the wastes, prevent flies from emerging from the wastes, reduce windblown litter, and reduce odors. Porous soils along all sides of the excavated fill area will be sealed and a layer of gravel will be placed along the east and west sides of the fill area. This will provide a barrier to prevent lateral movement of gases produced during the decomposition process and will allow the gases to be vented vertically out of the fill area.

A maintenance program will be established to collect any litter which may blow away from the daily operation area. Water will be used in the daily operation area as required in dry weather to control dust. Excavation cuts and earth stockpiles left exposed over seasons of heavy rainfall will be covered as required to reduce erosion and the amount of sediments delivered to the on-site runoff holding pond.

As each stage of the landfill area is completed to final elevations, a final cover of earth will be applied to the top and sides of the fill area. The final cover will consist of 6 inches of topsoil, over 1.5 feet of on-site soils, over 1 foot of selected on-site soils (least pervious soils compacted to near optimum density) for a total of 3 feet minimum earth cover over the solid waste. The topsoil will be planted with grass.

Table 1-2

Summary of Quantities at End of Landfill Development Stage

Item	Initial Site Construction	STAGE OF SANITARY LANDFILL OPERATION						Total
		I	II	III	IV	V	VI	
Solid waste plus daily cover (CY)	0	319,000	759,000	566,000	443,000	385,000	437,000	2,909,000 CY
Compacted solid waste								
Volume (CY)	0	250,000	594,000	443,000	347,000	302,000	342,000	2,278,000 CY
Weight (tons)	0	125,000	297,000	221,500	173,500	151,000	171,000	1,139,000 T
Excavation								
Location	I & II area	III area	IV area	V area	VI area	-	-	-
Surface Area (ac.)	21	8.4	8.4	8.4	10.2			56.4 ac.
Volume (CY)	438,000	168,000	196,000	282,000	313,000	0	0	1,397,000 CY
Required Cover								
Surface Area (ac.)	0	0	15.5	8.9	8.4	9.3	14.3	56.4 ac
Volume (CY)	0	69,000	226,000	157,000	128,000	119,000	150,000	850,000 CY
Excess Soil Stockpile								
Volume (CY)	438,000	537,000	506,000	631,000	816,000	697,000	547,000	547,000 CY

Other plantings such as trees and shrubs will require special preparation at each location to extend the soil materials beyond the root zones.

Water quality in the holding pond for on-site surface runoff will be periodically monitored to prevent pollution of the diverted creek which will receive the holding pond overflow.

On-Site Surface Runoff

The fill area drains to the north. Surface runoff from previously filled areas and from cleared and excavated areas will be collected and discharged into the on-site runoff settling pond at the north end of the site. The collection system will consist of sealed drainpipe to carry runoff through the filled area plus open ditches to collect and carry runoff around the toe of the filled areas. Overflow from the settling pond will be discharged into the existing creek. The settling pond will provide 10 days detention time at an average annual rainfall of 45 inches over 365 days and will hold approximately 8 acre-feet of water. The purpose of the pond is to remove suspended and settleable solids from the on-site surface runoff.

Off-Site Surface Runoff

Surface runoff from the south and west will be intercepted by the creek diversion. Surface runoff from the east will be insignificant and will be handled as on-site runoff.

A pond will be constructed in the existing creek bed at the diversion point south of the fill area and will have a minimum water surface elevation of 307 feet during dry weather. The pond will be used to detain storm runoff from the 420-acre upstream watershed to control peak runoff flows in the downstream segments of the creek. The pond, when filled to a maximum elevation of 310 feet, will have a volume of 7 acre-feet and a depth of up to 11 feet, and will cover approximately 1.5 acres. During dry weather, the pond will cover about 0.8 acres.

Off-Site Groundwater

The highly impervious leachate barrier along the bottom and lower elevations of the fill area will prevent groundwater from flowing into the fill area. The creek diversion ditch will intercept and drain groundwater flowing from the south and west. Groundwater flowing from east and north of the fill area will be insignificant, and will be handled as leachate if any ever penetrates the relatively impervious leachate barrier along higher elevations of the fill area sides.

Leachate Collection, Treatment, and Disposal Facilities

The leachate collection, treatment, and disposal facilities will consist of leachate barriers, leachate collection system, raw leachate pump station, leachate treatment facilities, and an outfall.

Excavation in the fill area will expose dense sandstone and dense glacial till over most of the bottom and lower elevation side surfaces, and will occasionally expose loose sands along the western side of the fill area. The dense glacial till (permeability range of $1x10^{-5}$ cm/sec) and dense sandstone (less permeable than till) are relatively impermeable, and will act as a natural barrier to minimize migration of leachate and gases out of the fill area. The following approach will be used to provide a leachate barrier along the bottom and sides of the fill area and to drain leachate to the collection system:

1. The bottom and sides of the fill area will be lined with a leachate barrier material that will have a permeability less than $1x10^{-8}$ cm/sec, and will not be degraded by leachate or gases for a minimum of 40 years. The leachate barrier material will also not be susceptible to damage by vehicle traffic or solid waste materials. Methods being considered at various locations within the fill area include membrane liners (i.e. PVC), asphaltic concrete, and a chemical resin that stabilizes and seals the surface soils. Protective layers of sandy soils would be placed over the membrane or chemical resin liners. The liner will extend up to the top of the road berm along the south and west sides of the fill area, and will extend a minimum of 15 feet vertically up the excavated eastern and northern side slopes. Dense sandstone may be used as a natural leachate barrier wherever the fill area is excavated into the dense sandstone and where the sandstone permeability is less than $1x10^{-8}$ cm/sec.

2. Permeable soils (greater than $1x10^{-5}$ cm/sec) along the eastern and northern side slopes of the excavated fill area will be sealed with the chemical resin material or membrane liner to drain leachate to the bottom and to provide a gas barrier.

3. The bottom of the fill area will be excavated to drain the shortest distance (east and west) to the center of the fill area which will be sloped to drain to the northern end.

4. A perforated pipe covered with a berm of gravel will be placed along the center drainage (from south to north) to provide positive drainage to the leachate collection system at the north end of the fill area. This will minimize the depth of leachate accumulation in the fill area and will minimize leachate loss should a local area of the leachate barrier fail.

Leachate will be collected by a perforated pipe placed in a gravel backfilled and lined trench. The trench will be constructed in dense sandstone across the northern end of the fill area to intercept all leachate drainage. The leachate collection system will drain to the leachate pump station located at the low point on the northern periphery of the fill area. The leachate pump station will discharge through a four-inch force main into the leachate treatment facility.

The leachate treatment facility will provide adequate treatment to allow effluent discharge to the on-site surface runoff holding pond and eventually to the existing creek north of the site. To meet this requirement, the average concentration of specific effluent constituents will not exceed the following:

Biochemical Oxygen Demand	5 mg/1
Suspended Solids	5 mg/1
Chemical Oxygen Demand	10 mg/1
Phosphates (as phosphorus)	1 mg/1
Total Coliform Bacteria	20/100 ml
pH	within limits of 6.0 to 9.0

Based on this, the leachate treatment facility will consist of the following units:

Aerated Lagoon (11 day detention)
Flash mixing unit with chemical addition
Flocculation unit
Sedimentation unit (2 hour detention)
Activated carbon reactors
Pressure filter
Chlorine contact chamber (60 minutes detention)
Dechlorination unit (activated carbon)
pH adjustment unit
Sludge holding tank (15 day storage capacity)

The effluent from the pH adjustment unit of the leachate treatment facility will be discharged to the on-site surface runoff ditch through an eight-inch outfall pipe. The treated leachate will receive further treatment in the on-site surface runoff holding pond prior to discharge to the existing creek north of the landfill site.

The leachate treatment facility will be designed for a flow of twenty-five gallons per minute and a biochemical oxygen demand concentration of 2,000 milligrams per liter. The entire facility, however, will be designed so that it can be easily expanded to accommodate any future increased hydraulic or organic leachate loads.

Gas

Gas controls will be constructed as part of initial site preparation and will also be extended during development of each landfill stage. The bottom and sides of the excavated fill area will be lined with a leachate barrier material as previously discussed. The impervious leachate barrier and the relatively impervious glacial till along the excavated sides of the fill area will prevent gas from migrating through the soils to adjacent property. A layer of gravel will be placed along the eastern and western sides of the fill area to allow gases to be vented vertically out of the fill area for dissipation into the atmosphere or burning as appropriate. Vents placed between each daily cell of solid waste will allow gases to move laterally to the vertical vent along the eastern and western sides of the fill area. The relatively impervious soils used as daily cover material on the solid waste will minimize gas movement out of the fill area except through the controlled venting system.

It is not known whether gas barriers have been used successfully at landfills in the northwest. However, the barrier approach with gravel vents is a recognized sanitary landfill design practice for gas control that has been applied successfully in other areas (Brunner, D. R., and D. J. Keller, Sanitary Landfill Design and Operation, 1972; Hagerty, D. J., J. L. Pavoni, and J. E. Heer, Jr., Solid Waste Management, 1973).

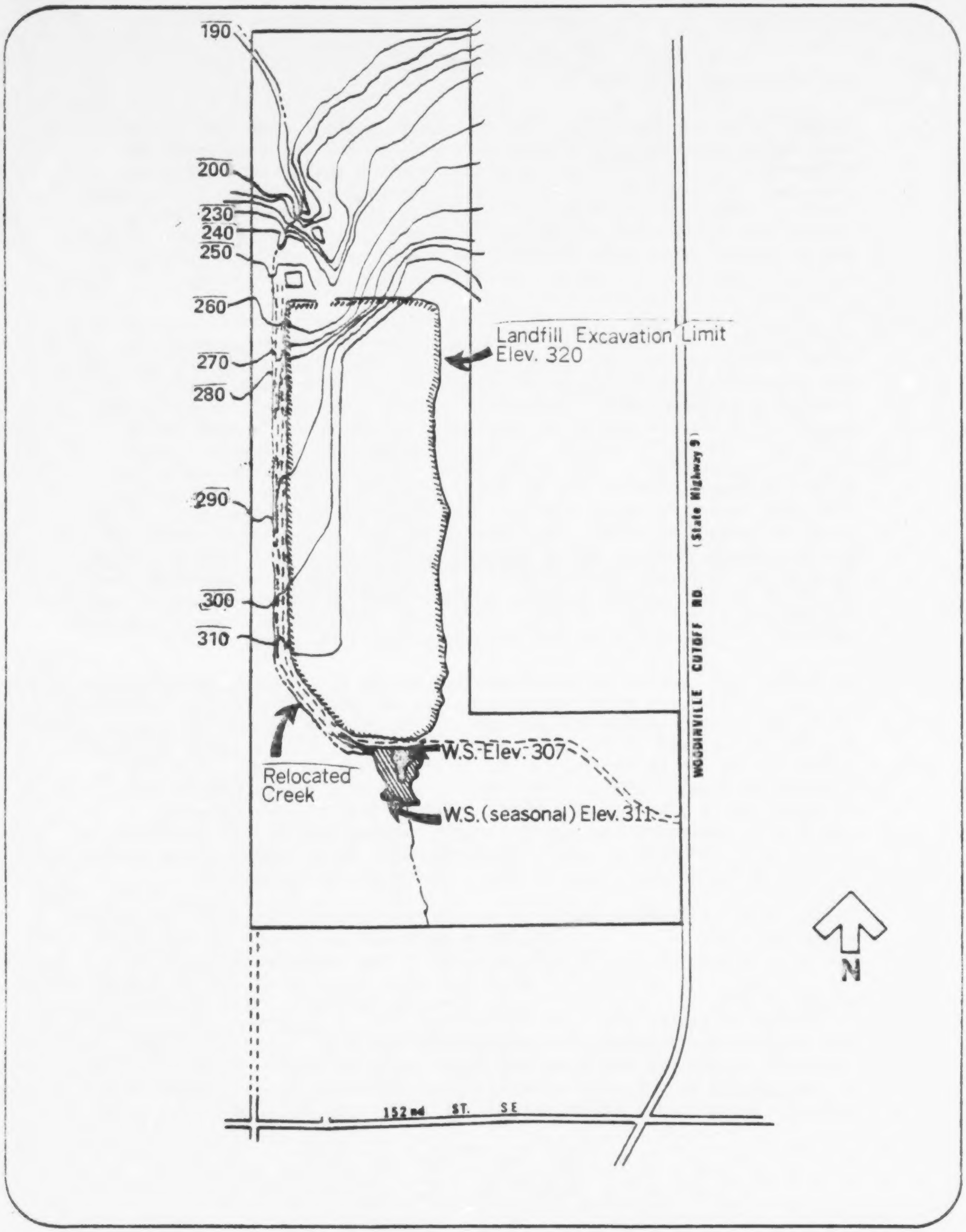
Monitoring

Air quality will be monitored to determine if a piped collection system is required for gas control. Water quality will be monitored in the creek (above and below the fill area), in the on-site runoff holding pond, and in groundwater monitoring wells outside the fill area to prevent pollution of the diverted creek and pollution of groundwater.

Phase III - Future Use

Future use of the 200-acre Cathcart site is presently unknown. However, the final elevations and contours (refer to Figure 1-6) have been selected to provide large gently sloped areas suitable for developing active recreation facilities (such as tennis courts, ball parks, soccer fields, archery range, golf course, and bicycle pathways) and/or passive recreation facilities (such as parks, picnic areas, gardens, walkways, or open space). As only 56 acres of the site would be filled with solid waste, considerable area will be suitable for structures. Large areas will be left in their natural condition. The holding ponds and the diverted creek could be developed to enhance the visual aesthetics of the site. The paved, double lane service road will provide vehicle access to much of the site.

After the fill area has been closed and landfilling of solid waste ceases, it will be maintained by filling any resulting depressions with earth, grading to maintain drainage, and reseeding. The gas controls, leachate treatment facility and on-site runoff holding pond will be maintained and operated until they are no longer required. Monitoring of gas, surface waters in the creek, groundwater and water in the surface runoff holding pond will be done by the Snohomish County Department of Public Works, and results will be submitted to the Snohomish Health District for review.


190
200
230
240
250
260
270
280
290
300
310
Landfill Excavation Limit
Elev. 320
W.S. Elev. 307
Relocated
Creek
W.S. (seasonal) Elev. 311
WOODINVILLE CUTOFF RD. (State Highway 9)
152nd ST. SE
N

FINAL SITE CONTOURS

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 1-6

HISTORICAL BACKGROUND

Shortly after the closure in 1967 of a major garbage dump site in southwest Snohomish County, officials of the county and its municipalities requested a comprehensive study of the county's solid waste management problems. In response to this request, the Snohomish County Solid Waste Steering Committee was organized in 1968 to find means of initiating a county-wide solid waste program. One of the early actions of the committee was to request the County Planning Department to investigate potential sources of funding to undertake a county-wide solid waste study.

In 1969, the Snohomish County Planning Department submitted a request to the Department of Housing and Urban Development for a grant under the Urban Systems Engineering Demonstration Program. This grant was approved and resulted in the organization of an urban systems study program jointly funded by the Department of Housing and Urban Development and Snohomish County. The study included an evaluation of the county's solid waste problems. The study resulted in the development of a computer-aided planning methodology to aid in the solid waste management planning for Snohomish County. Utilizing the methodology, a study was conducted by Snohomish County to analyze alternative solutions for the county's solid waste management problems. The results of this analysis were presented in the Interim Report - Solid Waste Management Planning - Snohomish County, Washington, completed in May, 1971. The Interim Report recommended that Snohomish County develop a major landfill site "as soon as possible" and recommended five potential sites for further analysis for location of the facility. Cathcart was one of these potential five sites.

In April, 1972, Snohomish County applied to the U. S. Environmental Protection Agency for a solid waste demonstration grant for funding assistance to implement the recommendations made in the Interim Report. In March, 1973, a grant was awarded to the county for use in developing a proper sanitary landfill facility to serve as a model for the region. This grant was accepted in August, 1973 by the Board of Snohomish County Commissioners. While the grant provided for only a small portion of the financing required to implement the Interim Report recommendations, it committed the County to develop a land disposal facility which would utilize proper techniques of design, construction, maintenance and operation.

In May, 1973, Snohomish County initiated a program to implement the recommendations made in the Interim Report under the conditions specified by the U. S. Environmental Protection Agency. The county selected a Solid Waste Coordinator in the Department of Public Works to direct the implementation program. The Solid Waste Steering Committee, made up of representatives of cities and towns within the county, began functioning as a coordinating and information dissemination body. A design study was initiated to analyze the potential sites selected for the landfill facility in the Interim Report, and a public information/citizen involvement program was incorporated within the design study. In addition to the sites recommended for further analysis in the Interim Report, the design study evaluated additional sites that conformed to the locational criteria developed in the report.

In November, 1973, the design study completed the analysis, evaluation, and preliminary engineering studies of the alternative sites for location of the sanitary landfill. This study concluded that, on the basis of economic and environmental criteria, the proposed sanitary landfill site addressed in this Final Environmental Impact Statement was the best available location for a sanitary landfill.

PUBLIC PARTICIPATION

Public participation regarding the overall Solid Waste Management System has occurred on two levels - official input from cities and towns has been obtained through the Solid Waste Management Steering Committee and through presentations to various city councils. Direct communication with the general public has occurred through the press, interest group presentations, brochures, informational mailings and through individual contacts in person or by telephone.

SOLID WASTE MANAGEMENT STEERING COMMITTEE

In 1967, solid waste disposal was recognized as a serious problem in Snohomish County. The Snohomish Health District Board directed its staff to contact city officials, county representatives and other interested parties for the purpose of studying ways and means of bringing about a county-wide solid waste management program for Snohomish County. The first meeting with a group naming itself "The Snohomish County Solid Waste Disposal Steering Committee" was held in January of 1968. Since that time and through the present, that group, now calling itself "Snohomish County Solid Waste Management Steering Committee," has met to coordinate solutions to serious solid waste disposal problems.

In February of 1969, the Snohomish County Planning Department presented to the Steering Committee a new approach for funding a solid waste study under a federal grant called WASH-USE-1. In that same year the Steering Committee endorsed the study to be made by the Planning Department.

The resulting Interim Report on Solid Waste Management Planning for Snohomish County was published in 1971. In September of that year, the Steering Committee reviewed the Interim Plan and submitted its recommendations to the Snohomish County Commissioners. It is on the basis of these recommendations that the County Commissioners have proceeded to implement the basic recommendations of the 1971 study.

As implementation has proceeded, the Steering Committee has met to review various details with respect to the financing and operation of the county-wide solid waste management system. The Steering Committee has passed a formal resolution supporting the Comprehensive Solid Waste Management Plan and supporting the selection of the Cathcart landfill site as the primary landfill for Snohomish County.

COMMUNICATION THROUGH THE MEDIA

Heavy media coverage of the project has taken place since late 1972. The Solid Waste Division files contain many press clippings relating directly to the implementation project.

The fact that the Cathcart area was under consideration as a landfill site location first appeared in the press in September of 1973. Its selection as the best site, after detailed engineering studies, was announced to the press in December of 1973.

GENERAL CITIZEN INPUT

As a part of the WASH-USE-1 study effort in 1971, Systems Control, Inc. distributed a questionnaire to a selected sample population. Nearly 200 responses were received. Overall program priorities and practices have been guided by this response.

In November of 1973 the Department of Public Works distributed a questionnaire as a newspaper advertisement. Although only 20 responses were received, the general trend of thought approximated that evidenced in the earlier survey.

A number of individual meetings, discussions, and phone calls have also served to obtain general citizen input. These have included conversations with the general public, interest group representatives, and individuals from the Cathcart area.

INPUT OF CATHCART RESIDENTS

Preliminary engineering studies, concluded in December of 1973, indicated that the Cathcart site was the most favorable of those examined by the County. At that time, an informational brochure was mailed to residents of the area to announce this finding and to announce that more detailed studies were underway. Initially, this brochure did not generate a significant level of response.

On January 10, 1974, these residents were informed of a county public meeting for a discussion of this subject. Prior to this meeting, a group of residents presented a petition to the Board of County Commissioners in opposition to the proposed site. The petition contained approximately 360 signatures representing approximately 320 households. The planned public meeting was held on January 23, 1975 at the Cathcart Elementary School. It was attended by about 150 people, most of whom voiced strong opposition to the proposed site. Most present viewed the meeting as a public protest meeting. Concerns voiced included land values, traffic, water pollution, noise, and aesthetics.

In May of 1974, additional information materials were mailed to area residents and to petition signators. Present activities include a series of meetings with area residents to better inform the community of the true nature of the planned project.

PROPOSED METHOD OF FINANCING

An internal staff report, titled "Alternative Solid Waste Management Organizational Structures and Funding Schemes," was prepared in April of 1972 to assist in the selection of a method of financing for the county-wide solid waste management system. From this report, several alternative systems were evaluated by the Solid Waste Management Steering Committee.

As approved by the Steering Committee, operating expenses and amortized capital outlay will be recovered through user fees collected at the landfill sites and transfer stations. The overall financing method, in accordance with the adopted Snohomish County Comprehensive Solid Waste Management Plan, is as follows:

> . . . The basic method of financing for the county-wide solid waste management system shall be the user fee method, whereby each user of the solid waste management facilities . . . shall pay for each individual use of the facilities.

This method of financing will apply to the operation of the Cathcart Sanitary Landfill.

In accordance with Chapter 2.68 of the Snohomish County Code, the Snohomish County Department of Public Works is the sponsor and responsible agency for this project. Therefore, the Department will prepare an annual budget for all capital and operating expenditures related to the solid waste management program and to the development and operation of facilities resulting therefrom. For 1974, the Board of Snohomish County Commissioners appropriated $1,568,950 from the Snohomish County General Fund for solid waste capital outlays.

RELATIONSHIP WITH LAWS, POLICIES, AND PLANS

State Solid Waste Management Act of 1969

The State Solid Waste Management Act of 1969 (RCW 70.95) required each county to prepare a comprehensive solid waste management plan. The plan was to develop a program for eventual compliance with the Department of Ecology Regulations Relating to Minimum Functional Standards for Solid Waste Handling (WAC 173-301).

The effort that resulted in the Interim Report, a short-range plan addressing critical short-term disposal problems, started prior to the passage of the Act. After passage of the Act, the WASH-USE-1 program was developed so that its solid waste portion would form the basis for the development of a plan to conform with the Act's requirements.

A small supplementary grant for the final plan report writing was awarded to the county in April of 1974. Data developed during the entire planning/implementation effort has received the constant review and approval of the Solid Waste Management Steering Committee, and the final plan received formal approval by the Department of Ecology in April of 1975. The proposed action is in accordance with the overall planning effort, and would achieve compliance with WAC 173-301 for a major portion of the solid wastes generated within Snohomish County.

Snohomish Health District Regulations Governing Solid Waste Handling

In accordance with RCW 70.95.160, the Snohomish Health District has adopted an ordinance governing solid waste handling. The ordinance is more restrictive than the state standards promulgated under WAC 173-301. The proposed action will comply with these standards.

Snohomish County's Hillman Area Comprehensive Land Use Plan

Snohomish County's Hillman Area Comprehensive Land Use Plan was adopted by the Board of County Commissioners in 1964. The plan designates the ultimate use of the project site and the general surrounding area. This plan is further discussed in the section on land use in Chapter 2 - Existing Conditions.

Lake Stevens/Snohomish Area Comprehensive Land Use Plan

The Lake Stevens/Snohomish Area Comprehensive Land Use Plan was adopted by the Board of County Commissioners in 1964. The plan affects land north of the project site extending north of the Ree's Corner (intersection between SR9 and Lowell-Cathcart Road).

Puget Sound Governmental Conference's Interim Regional Development Plan (IRDP)

The Puget Sound Governmental Conference's Interim Regional Development Plan (IRDP) is a composite of all local plans in the region. The influence the IRDP has on the project will be directly equivalent to the influence which any one of the applicable local plans would have.

The Snohomish County Transportation Study

The Snohomish County Transportation Study was adopted by the Board of County Commissioners in 1972. This study contains a Recommended Improvement Program for the county highway system for both the 1972-1977 and 1978-1990 time frames.

Water and Sewer District Plans

Water and Sewer District Plans, pertinent to the impact area, include the following:

- WASH-USE-1 Sewer, Water, Solid Waste, and Storm Drainage Studies
- Farmers Home Administration Sewer and Water Study
- Cross Valley Water Association Plans
- Fircrest Sewer District Plans
- Silver Lake Water District Plans

CHAPTER 2

EXISTING CONDITIONS

NATURAL ENVIRONMENT

Climate

The climate in southwest Snohomish County is characterized by mild, moist winters and cool, dry summers and frequent wind. Three United States Weather Bureau stations are located within an eight-mile radius of the Cathcart site. One is at Paine Field, near Everett, another in the City of Snohomish, and the third is in the City of Bothell.

Daytime temperatures above 80°F. occur during the summer months, but the nights are generally cool. Highest recorded temperatures near the Cathcart site are in the range of 90° to 100°F. By using data reported for the three nearby weather stations, the following temperature averages and extremes (Table 2-1.1) are estimated to be representative of the Cathcart site:

Table 2-1.1

Temperature Averages and Extremes (Degrees Fahrenheit)

	January	July
Average Maximum	44.1	73.9
Average Minimum	32.3	51.1
Mean	38.2	62.0
Lowest	1	39
Highest	68	96

Relative humidities are generally lower during the summer months and higher during the winter months. Fog occurs frequently in the morning hours during fall, winter, and spring. Periods of subfreezing temperatures occur occasionally during the winter months, sometimes accompanied by snowfall. Freezing temperatures may occur between the end of October into the month of April. Moderate temperature fluctuations sometimes occur when polar air masses invade the area or when such masses are displaced by warm maritime air masses.

Precipitation at the Cathcart site can be estimated by comparing the precipitation reported at the surrounding weather stations with allowance given to the effects of local topography. This results in an estimated average annual precipitation of about 43 inches ranging from a low of 24 inches to a high of 50 inches. The distribution of precipitation can be characterized by greater monthly accumulations occurring during the winter months with the summer months being the time of lowest accumulations. The greatest 24 hour precipitation amount recorded within the vicinity was 2.80 inches at Bothell, Washington.

The average seasonal snowfall for the Cathcart site is approximately 15 inches. Snowfall is usually confined to the period of December through February. Ground accumulations may last from one day to about ten days before melting.

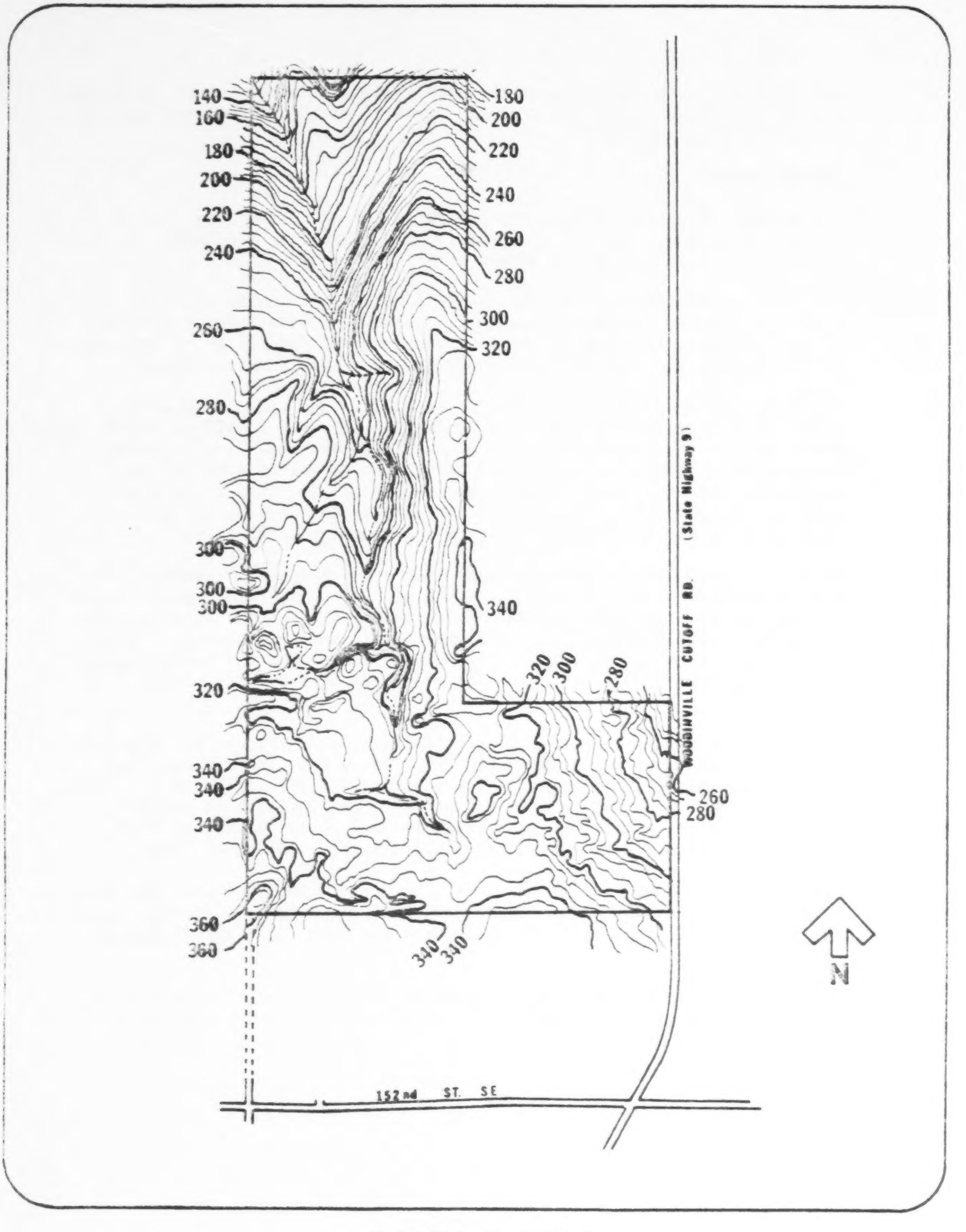
Average wind velocities generally range from 4 to 12 miles per hour and are predominantly from the SE or SSE during the winter months and from the N or NNW during the summer months. Maximum wind velocities occasionally exceed 25 miles per hour. Peak gusts within the vicinity have been measured up to 72 miles per hour.

Evaporation and transpiration are difficult to measure and are subject to wide seasonal and regional fluctuations. Evapotranspiration is related to differences in vapor pressure, air and water temperatures, wind, atmospheric pressures, humidity, quality of water and types of foliage.

Evapotranspiration rates have been estimated for a number of areas in the Puget Sound Region by the Puget Sound Task Force - Pacific Northwest River Basins Commission. These estimates were published in Puget Sound and Adjacent Waters Study - Appendix III, in 1970. For an area with an average annual precipitation rate of approximately 40 inches, annual evapotranspiration was estimated to equal approximately 26 inches. Net evapotranspiration was estimated to occur on the average from early May to late September.

Topography

The Cathcart site is approximately 200 acres in size and is located on a sloping bench of land above the wide Snohomish River Valley. The valley floor below the site varies in elevation between 5 and 20 feet above Mean Sea Level (MSL). The land at the valley's edge rises sharply towards the south into the northerly portion of the site. Cathcart site elevations vary north to south respectively, from about 130 feet above MSL to 360 feet above MSL as shown in Figure 2-1. (Additional topographic features of the surrounding area are shown in Figure 2-5.) The western portion of the site lies in a gradually sloping gully (2%) between two ridges. The southeastern 40 acre portion of the site slopes moderately (5%) from the eastern ridge down toward Highway SR-9.


140
160
180
200
220
240
260
280
300
300
300
320
340
340
340
360
360
180
200
220
240
260
280
300
320
340
320
300
280
260
280
340
340
WOODINVILLE CUTOFF RD. (State Highway 9)
152nd ST. SE
N

TOPOGRAPHY

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-1

The western 160 acre-portion of the site is naturally drained by two intermittent streams entering the property from the south and west and leaving the property on the north.

Geology and Soils

The geology and soils of the Cathcart site were studied by the firm of Geolabs-Washington, Inc., Soil Mechanics and Foundation Engineers. A summary of their findings is presented below.

The site is underlain at various depths from several inches up to 50 feet by a soft to moderately hard, gray, silty sandstone reported to be of the Oligocene Age (before the last glaciation), and may be on the order of 500 feet thick. Beneath this sandstone are older basaltic rocks.

Overlying the sandstone, atop the high ground of the site, is glacial till. This material was deposited by glacial ice some 13,000 to 15,000 years ago, as the glacier traveled southward through the area. In the western and southern portion of the site, fine to coarse sands of the Esperance sands are found between the base of glacial till and the surface of the sandstone. The material represents the outwash sands, carried by meltwater streams issuing from the approaching glacier.

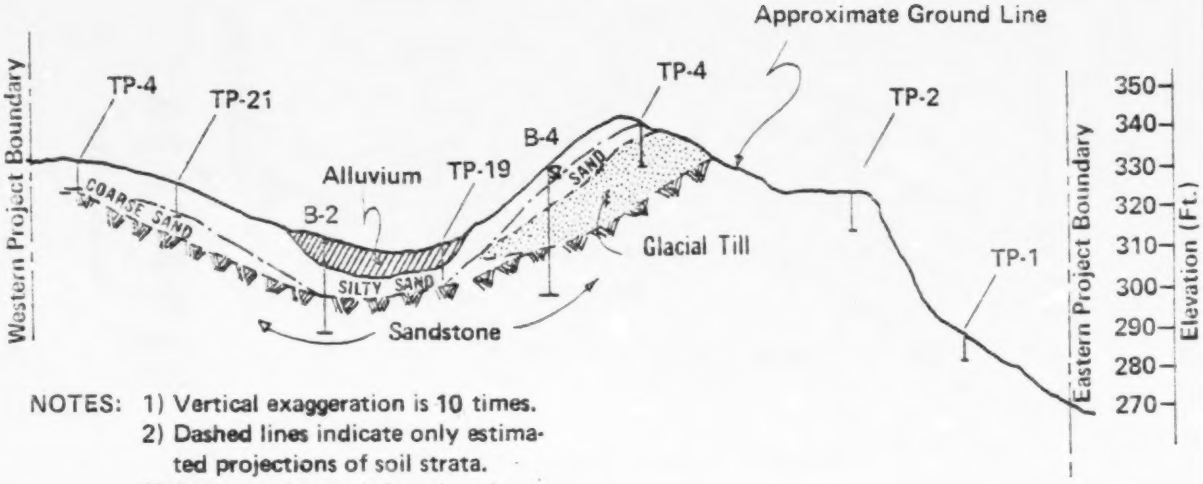
As the ice sheet melted away, streams from the ice face or remaining ice blocks left behind on the uplands, along with snow and rain, carved a draw through the till to bedrock. This draw running through the site has been partially filled with post-glacial recessional sands and gravels. Localized kettles or potholes in the till surface exist near the western margin of the property. These contain silts and clays or peats and highly organic soil.

Soil profiles extending through the site are shown in Figure 2-2 and 2-3, with their locations keyed in Figure 2-4. The dense glacial till, the loose sands, and the weathered sandstone contain a relatively large percentage of fines. Soil analysis indicates that the glacial till contains about 45 percent fines, the loose sands contain 20 to 30 percent fines, and the weathered sandstones contain approximately 18 percent fines.

Test drilling and on-site water level observations indicate that the sandstone is only slightly permeable. The glacial till is a relatively impervious mixture of gravel, silt and sand which has been thoroughly compacted and consolidated.

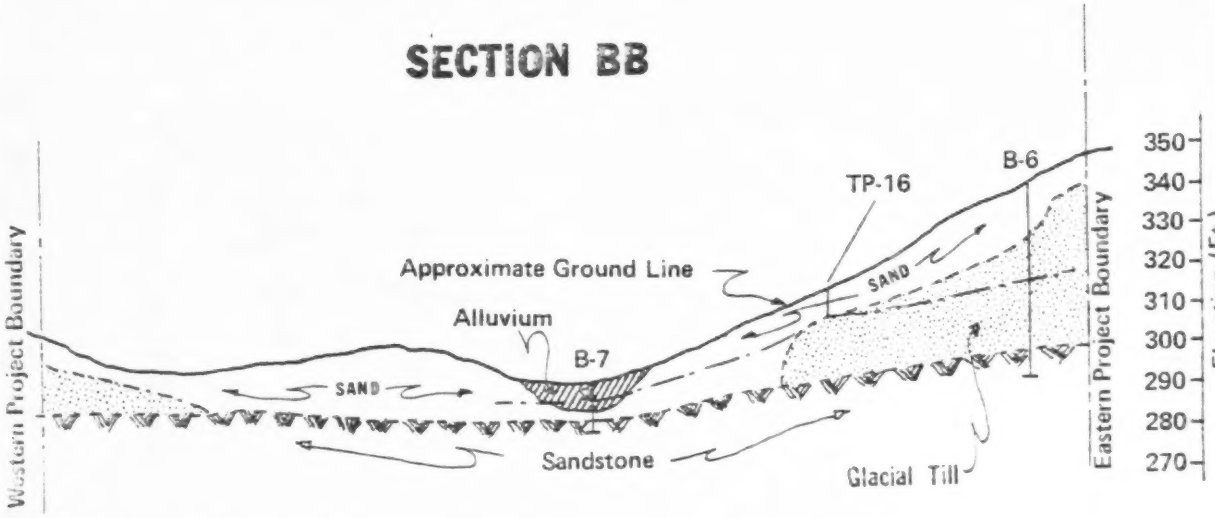
Soils information may be obtained from the following reports prepared by Geolabs-Washington, Inc., 12893 N. E. 15th Place, Bellevue, Washington 98005.

SECTION AA


Approximate Ground Line
Western Project Boundary
TP-4
TP-21
TP-4
TP-2
B-4
Alluvium
TP-19
B-2
COARSE SAND
SAND
SILTY SAND
Glacial Till
Sandstone
TP-1
Eastern Project Boundary
350
340
330
320
310
300
290
280
270
Elevation (Ft.)

NOTES: 1) Vertical exaggeration is 10 times.
2) Dashed lines indicate only estimated projections of soil strata.
3) Boring and test pit locations have
3 been projected to section line.
4) —·—- indicates piezometric surface.

SECTION BB

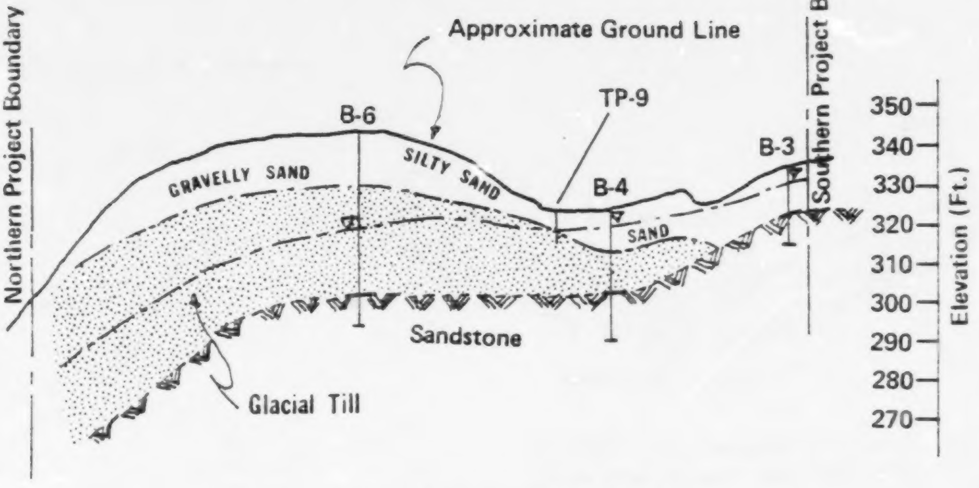

Western Project Boundary
B-6
TP-16
Approximate Ground Line
SAND
Alluvium
B-7
SAND
Sandstone
Glacial Till
Eastern Project Boundary
350
340
330
320
310
300
290
280
270
Elevation (Ft.)

NOTES: 1) Vertical exaggeration is 5 times.
2) Dashed lines indicate only estimated projections of soil strata.
3) Boring and test pit locations have been projected to section line.
4) —·——·–indicates piezometric surface.

EAST-WEST SOIL PROFILES

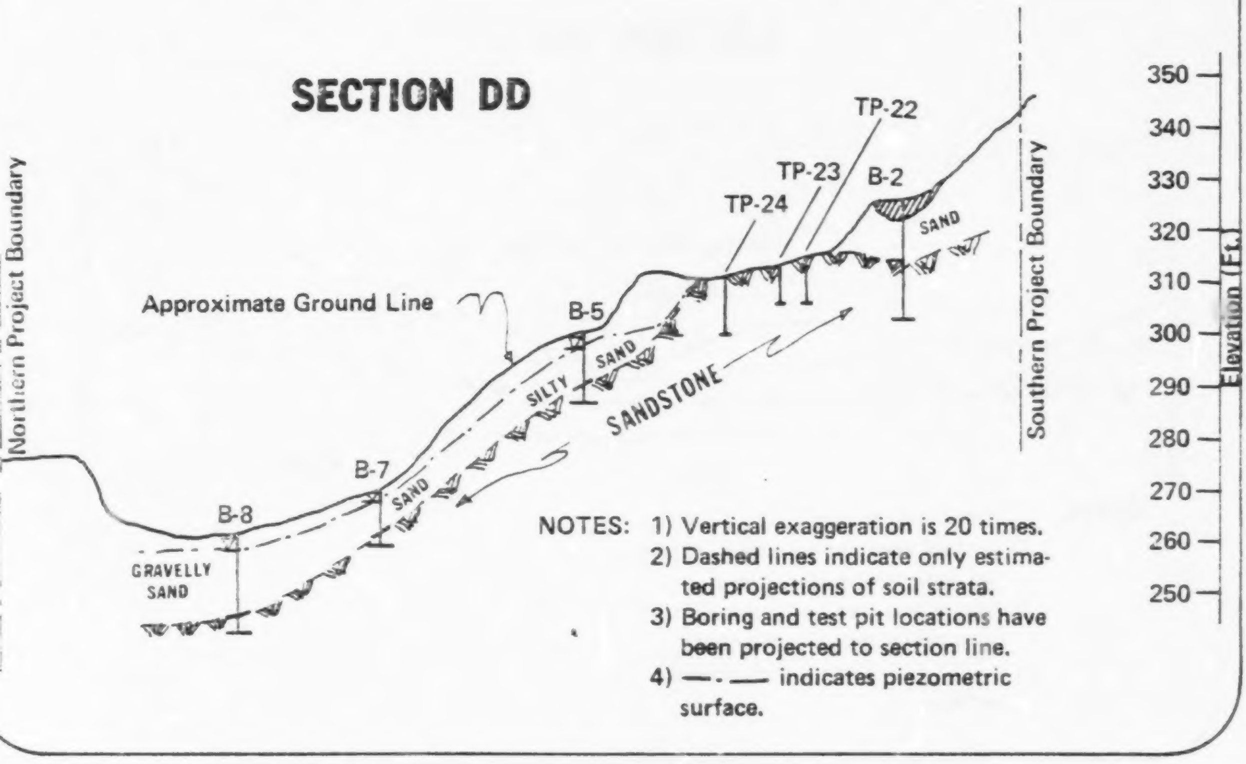
CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-2

SECTION CC


Approximate Ground Line
Northern Project Boundary
Southern Project Boundary
B-6
TP-9
B-3
B-4
GRAVELLY SAND
SILTY SAND
SAND
Sandstone
Glacial Till
350
340
330
320
310
300
290
280
270
Elevation (Ft.)

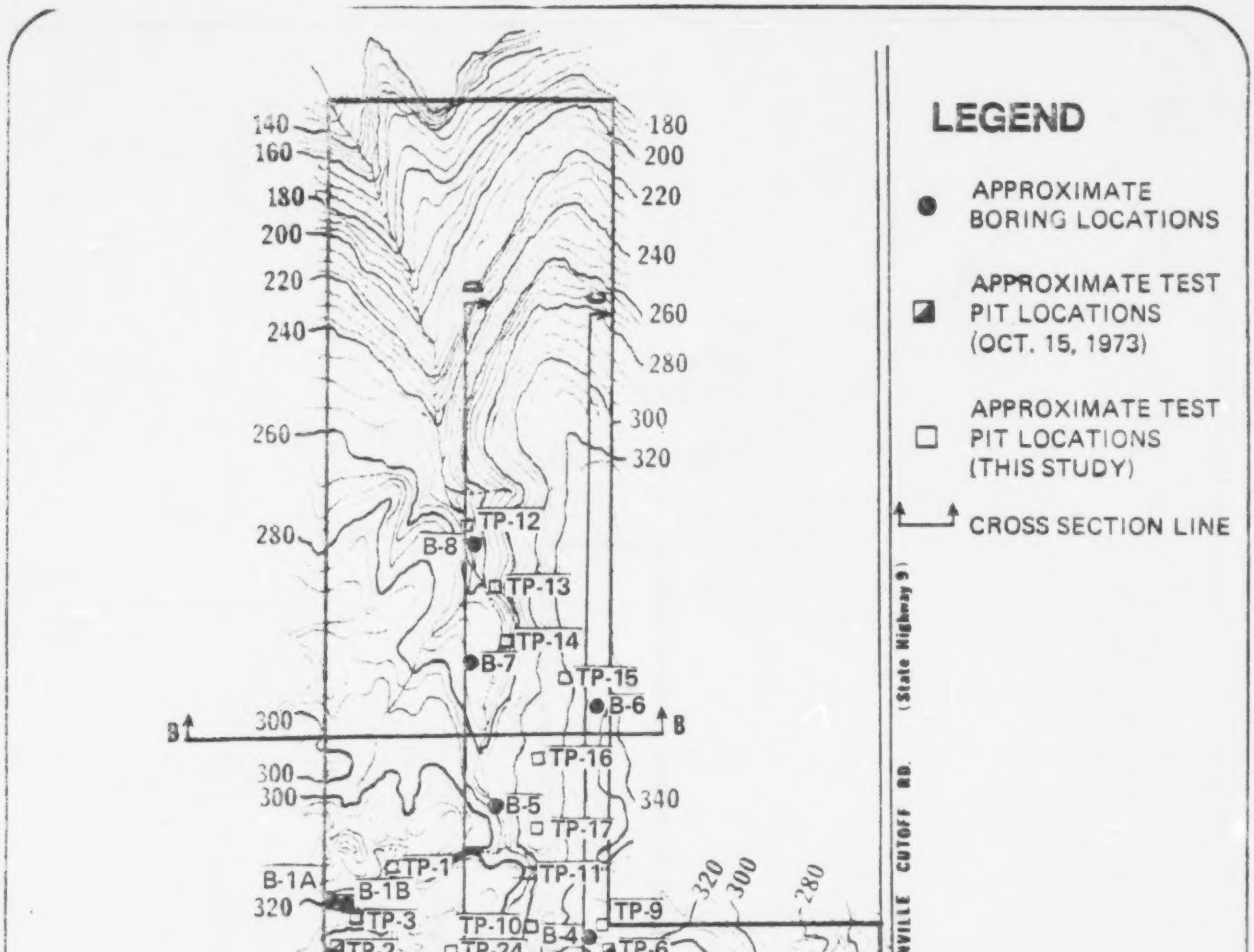
NOTES:
1) Vertical exaggeration is 20 times.
2) Dashed lines indicate only estimated projections of soil strata.
3) Boring and test pit locations have been projected to section line.
4) —·— indicates piezometric surface.

SECTION DD


Northern Project Boundary
Southern Project Boundary
Approximate Ground Line
TP-22
TP-23
TP-24
B-2
B-5
B-7
B-8
SAND
SILTY
SAND
SANDSTONE
SAND
GRAVELLY SAND
350
340
330
320
310
300
290
280
270
260
250
Elevation (Ft.)

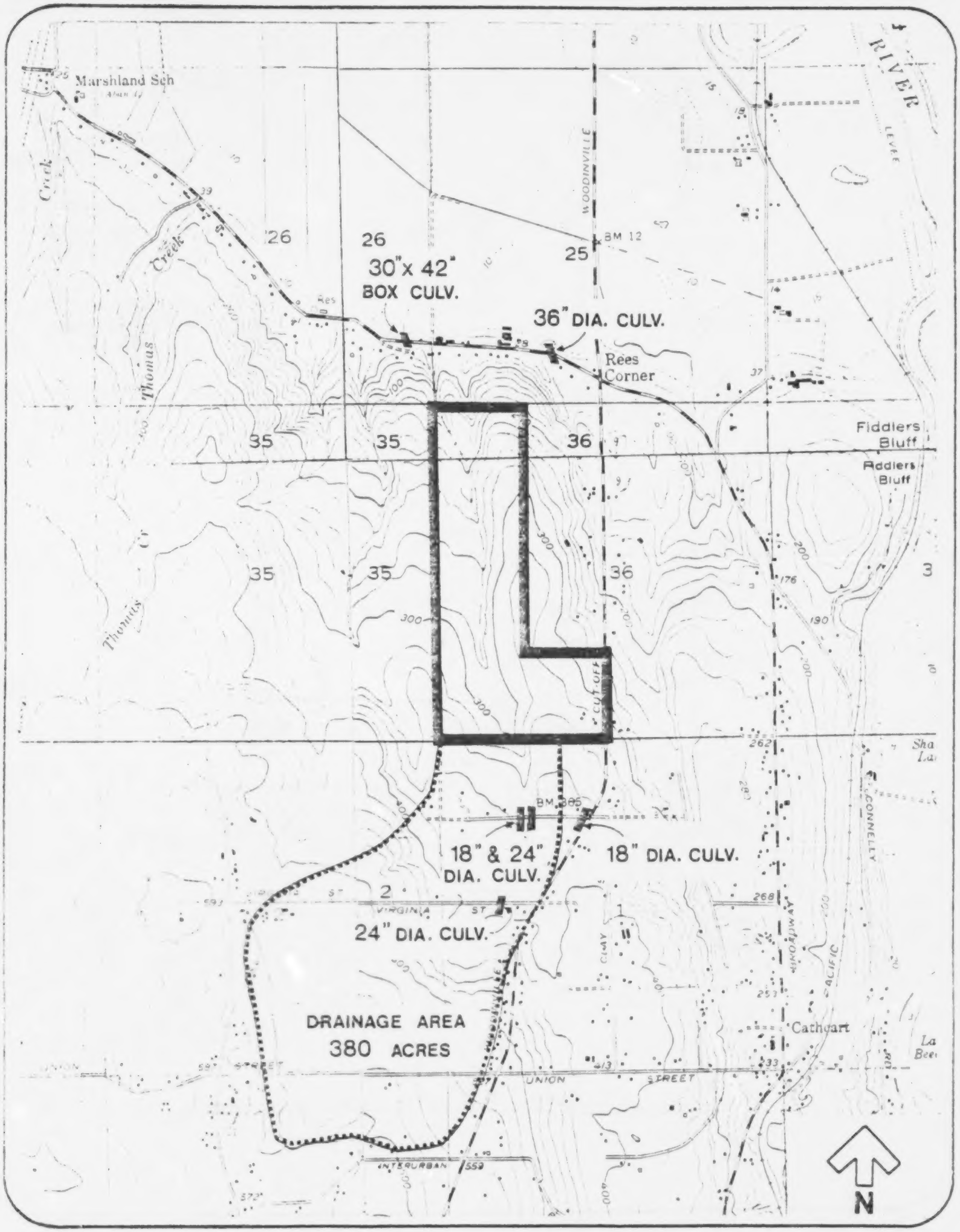
NOTES:
1) Vertical exaggeration is 20 times.
2) Dashed lines indicate only estimated projections of soil strata.
3) Boring and test pit locations have been projected to section line.
4) —·— indicates piezometric surface.

NORTH - SOUTH SOIL PROFILES


LEGEND
●
APPROXIMATE BORING LOCATIONS
◪
APPROXIMATE TEST PIT LOCATIONS (OCT. 15, 1973)
☐
APPROXIMATE TEST PIT LOCATIONS (THIS STUDY)
CROSS SECTION LINE
N
140
160
180
200
220
240
260
280
300
300
300
320
340
340
360
360
180
200
220
240
260
280
300
320
340
320
300
280
260
280
340
340
B
B
A
A
C
C
D
D
TP-12
B-8
TP-13
TP-14
B-7
TP-15
B-6
TP-16
B-5
TP-17
TP-1
TP-11
B-1A
B-1B
TP-3
TP-10
TP-9
B-4
TP-2
TP-24
TP-6
TP-23
TP-18
TP-5
TP-7
TP-22
TP-4
TP-21
TP-19
TP-4
TP-8
TP-9
TP-25
TP-3
TP-2
TP-10
TP-20
TP-1
TP-11
TP-5
B-2
TP-6
TP-8
B-3
TP-7
WOODINVILLE CUTOFF RD. (State Highway 9)
152nd ST. SE

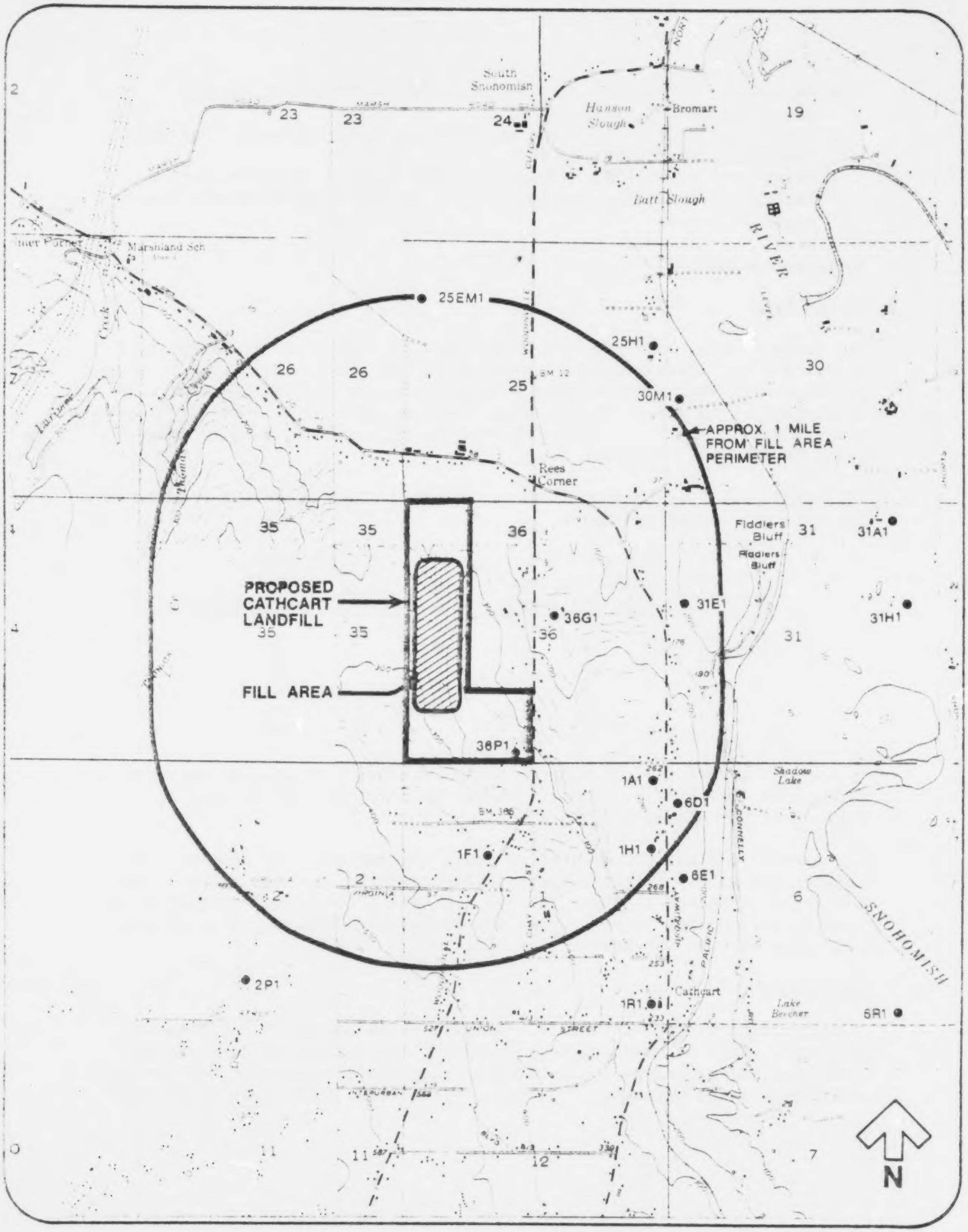
SOIL PROFILE LOCATIONS

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-4


Marshland Sch
Creek
Thomas Creek
Thomas
Thomas Cr
RIVER
LEVEE
WOODINVILLE
BM 12
26
26
25
30"x 42" BOX CULV.
36" DIA. CULV.
Res
Rees Corner
Fiddlers Bluff
Fiddlers Bluff
35
35
36
35
35
36
3
300
CUT-OFF
262
BM 385
18" & 24" DIA. CULV.
18" DIA. CULV.
2
VIRGINIA ST
24" DIA. CULV.
268
CONNELLY
BROADWAY
PACIFIC
Cathcart
DRAINAGE AREA 380 ACRES
UNION STREET
UNION STREET
INTERURBAN
N

SURFACE WATER DRAINAGE

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-5


South Snohomish
Hanson Slough
Bromart
19
23
23
24
Batt Slough
RIVER
Marshland Sch
Creek
25EM1
25H1
26
26
25
30
30M1
APPROX. 1 MILE FROM FILL AREA PERIMETER
Rees Corner
35
35
36
Fiddlers Bluff
31
31A1
PROPOSED CATHCART LANDFILL
31E1
36G1
31H1
35
35
36
31
FILL AREA
36P1
Shadow Lake
1A1
6D1
CONNELLY
1H1
1F1
6E1
2
VIRGINIA
6
SNOHOMISH
2P1
Cathcart
1R1
Lake Beecher
6R1
UNION
STREET
11
11
12
7
N

WELLS IN VICINITY OF CATHCART SITE

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT – FIGURE 2-5.2

- Report No. W-1035-62; "Ree's Corner Sanitary Landfill Site," dated October 15, 1973
- Report No. W-1035-64; "Cathcart Sanitary Landfill Site - Snohomish County";dated February, 1974
- Report No. W-1035-66; "Subsurface Investigation and Percolation Testing of Bedrock - Landfill Site - Cathcart, Washington"; dated August 9, 1974.

Hydrology and Drainage

Surface Water

The surface water drainage basin and drainage facilities are shown in Figure 2-5.1. Several drainage facilities have been constructed in conjunction with road construction. These include a 24-inch diameter culvert under 164th Street S. W. and an 18-inch and 24-inch diameter culvert under 152nd Street S. E. An additional 18-inch culvert extends under 152nd Street S. E. adjacent to SR9.

Estimated peak flow characteristics for the unnamed creek running through the site are summarized below:

Percent Chance of Occurring Once in Any Year	60-Minute Flow (cubic feet per second)
20	80
10	99
4	115
2	120
1	140

On March 31, 1974, the Washington State Department of Ecology measured flow in the creek at 3.0 cubic feet per second entering the site and 6.9 cubic feet per second leaving the site.

The northward flowing creeks which drain through the site join before leaving the site. This creek eventually enters a drainage canal crossing the flat Snohomish River Valley. It enters this canal through a 30-inch by 42-inch box culvert under Lowell-Cathcart Road which is located below the site at the base of the hill.

Groundwater

Precipitation in the vicinity of the site is in excess of forty inches per year. This precipitation is incapable of penetrating into the on-site till and sandstone in appreciable quantities because of the low permeability of the materials. Instead, water flows down slope to collect in various kettles and potholes, or into the two streams which cross the site. These two streams represent the surface of the local perched groundwater table which is trapped atop the glacial till and sandstone. Groundwater and surface water levels rise during the winter and spring to their highest levels and drop during the summer since net evapotranspiration occurs on the average from early May to late September. This creates a condition where virtually all rainfall entering the site during the winter flows directly off the site as surface runoff, while during the late summer, surface streams may become dry.

Water well logs on file with the State of Washington Department of Ecology and information obtained from local well drillers indicate that most of the wells in the immediate vicinity of the Cathcart site obtain water from perched sources atop the glacial till, from permeable lenses within the till, or from floodplain deposits of the Snohomish River Valley. Only one well is reported to obtain water from the basalt underlying the sandstone. This well is for the Cathcart School, and is located approximately 1.3 miles southeast of the fill area. It draws water from a fractured horizon about 140 to 150 feet below the surface. With some 500 feet of sandstone stratigraphically overlying the basalt, entry of leachate into this aquifer is unlikely.

The location of wells in the Cathcart vicinity are indicated on Figure 2-5.2 and the recorded well depths are summarized on Table 2-1.2. A shallow well (36 PI) is located in the southeastern corner of the Cathcart site, approximately 1,500 feet from the boundary of the proposed fill area. The well is separated from the fill area by a ridge of sandstone and glacial till. The well's aquifer is at 275 feet elevation which is higher than the bottom elevation for most of the proposed fill area which will range from approximately 292 feet elevation at south end to 237 feet elevation at the north end.

Seven wells are located within one mile of the proposed fill area boundary (refer to Figure 2-5.2). Three of the shallow wells (1A1, 6D1 and 31E1) are located over three-fourths of a mile from the fill area and have aquifer levels at elevations higher than the stream between the wells and the Cathcart site. One shallow well (1F1) is located over one-half mile south of the proposed fill area, and its aquifer is upslope of the fill area at approximately 70 feet higher in elevation. These four wells will not be affected by the Cathcart site. Well 36G1 is located approximately one-third mile east of the fill area, and its aquifer is at a lower elevation than the bottom of the fill area. A similar situation exists for Well 25EM1 which is located approximately 1 mile north of the fill area. Well 1H1 is located approximately one mile southeast of the proposed fill area. It is the deepest well in the vicinity of the Cathcart site and its aquifer is approximately 330 feet lower in elevation than the proposed bottom of the fill area. The sandstone found at the Cathcart site extends beyond the location of well 1H1 to at least the Snohomish River Valley. Further, subsurface soils investigations would be necessary

Table 2-1.2

Well Depths

Well Number	Elevation (ft.)	Depth to Water	Depth to Aquifer	Approx. Water Elevation
T27N R5E				
1A1	265	6	24	241
1F1	375	4	16	359
1H1	280	10	374	-94
1R1	250	70	140	110
2P1	600	8	28	572
T27N R6E				
6D1	260	2	7	253
6E1	265		145	120
6R1	23	4	68	-45
T28N R5E				
25E& M1	9	6		
25H1	15	8		
36G1	125	11		
36P1 (on site)	325	10	50	275
T28N R6E				
30M1	15	14	27	-12
31A1	20	6		
31E1	190	20	40	150
e1H1	20	10		

to identify any fractured or porous soil pathways between the fill area and wells 36G1, 25EM1, and 1H1 to determine if minimal leachate leakage from the lined fill area might affect the wells. Public water supply is available in the area.

Along the western boundary of the site, a thick layer of sand was encountered. This sand may be part of the surficial, weathered bedrock, or may be a portion of the Esperance sand formation. If these soils are part of the Esperance sands, they would represent the easternmost edge of a wedge shaped formation which extends for a considerable distance to the south and west, and is, in some areas, utilized as an aquifer to supply wells.

Ecological Community

A life zone possesses at least one major species of organism, and this organism (whether plant or animal)may be used to give title to the zone. The Cathcart site is located in the climatic climax Western Hemlock Life Zone (Tsuga Heterophylla). This life zone extends south from British Columbia through the Olympic Peninsula, coast ranges, Puget Trough, and the Cascade mountain range. The life zone is identified by its wet, mild climate, its specific soil types and species of vegetation and wildlife. The climate is the prime factor for establishing the extent and location of the life zone because of its influence on the type of vegetation and wildlife inhabiting the area.

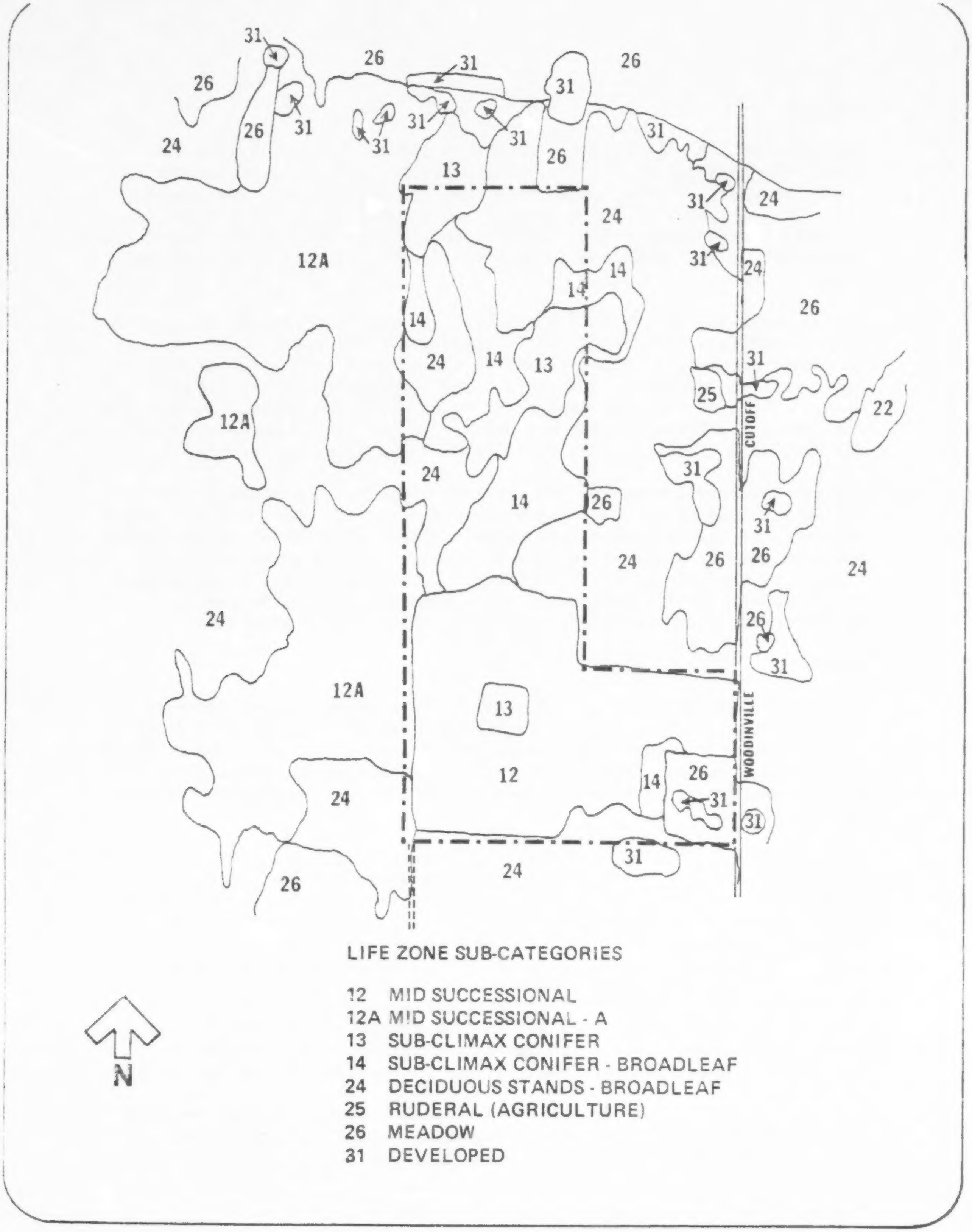
A life zone in its natural state, undisturbed by man's activities or major natural occurrences (fires, volcanoes, etc.) will tend to be inhabited by a homogeneous community termed the climatic climax community. This community of vegetation and wildlife is that which has evolved naturally to a state of equilibrium. The Western Hemlock Life Zone is thus given its title due to its potential dominant climax species: Western Hemlock.

Very little of the Western Hemlock zone is presently in climax condition since the zone has been under heavy logging pressure and urbanization. When an area within a life zone is disturbed and the existing climatic climax community destroyed, it normally takes a period of time before the climatic climax community reestablishes itself if left in a natural state. During this time, the area will go through various transitional stages where it is inhabited by a succession of communities, each giving way to the next until the climatic climax community is established. These various communities which exist prior to the climatic climax are termed seral communities. The edaphic communities exist in small areas which are not typical of the total natural life zone. An example is a community inhabiting a swamp in an otherwise forested region due to peculiar drainage characteristics in that particular area. The Cathcart site and the immediately adjacent area has been divided into its seral, edaphic, and man-affected subcategories, as shown in Figure 2-6. These subcategories are shown in Table 2-2. Additional detailed information is presented in Appendix B.

Table 2-2

Cathcart Site - Life Zone Subcategories

Symbol	Subcategories	Description
12	Mid-Successional	Shrub stage. Deciduous brush invades herbaceous cover at 4th or 5th year. It remains until overtopped by tree saplings, usually Douglas Fir.
12A	Mid-Successional	Late shrub early tree stage. Period when saplings are topping brush. Disturbance of the site is still evident and canopy closure is incomplete, 10 to 20 years after disturbance.
13	Subclimax Conifer	Douglas Fir is the dominant tree species.
14	Sub Climax Conifer - Broadleaf	After some field work in the planning area, many areas were determined to be in this mixed state, especially in the lowland areas adjacent to urbanized areas. In these areas conifer plantings have not been extensive and there are many stands of mixed Douglas Fir, Hemlock, Broadleaf Maple, Alder, and Western Red Cedar. These are natural successional growth areas that have not reached the climax stage yet.
24	Deciduous stands - Broadleaf	Talus slopes with dominant Broadleaf Maple and Vine Maple, *Acer Circinatum Querous*, Oak, Alder groves: sub climax variant.
25	Ruderal (Agricultural)	Produce agriculture; orchard, cereal grains, etc.
26	Meadow	Prairies, pastures, golf courses, etc.
31	Developed	Urban areas
32	Bare earth	Gravel pits, grading, strip mining, etc.


CUTOFF
WOODINVILLE
N
LIFE ZONE SUB-CATEGORIES
12 MID SUCCESSIONAL
12A MID SUCCESSIONAL - A
13 SUB-CLIMAX CONIFER
14 SUB-CLIMAX CONIFER - BROADLEAF
24 DECIDUOUS STANDS - BROADLEAF
25 RUDERAL (AGRICULTURE)
26 MEADOW
31 DEVELOPED

ECOLOGICAL ZONES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-6

Vegetation

The southern leg of the Cathcart site is generally young brushy Red Alder (Alnus Rubra) with a few young scattered conifers dotting the area, the area has been logged twice and is third growth (Subcategory 12). In the center of the area is a small patch of second growth conifers (mixed Douglas Fir, Western Hemlock, and Western Red Cedar). A small pasture and farmhouse is located in the southeast corner of the site.

The northern leg of the site consists of a mixture of second growth forests that are between 40 and 70 years old. The majority of the deciduous trees in both the 14 and 24 subcategory type areas is Red Alder with an understory of Oregon Grape (Beriberis) in the higher areas. Very few Big Leaf Maples are found along the stream course. The conifers are a three species mixture of Douglas Fir, Western Hemlock, and Western Red Cedar with a Sword Fern (Polysticum) understory.

The general surroundings of the site are second-growth mixed forest to the west and southwest, and the west-northwest. To the south and south-southwest is the typical developmental pattern of alternating disturbed pastures and yards and second growth forest. To the north are river valley pasture and agricultural lands. To the east are the Snohomish River and valley with some riparian vegetation, but mostly pasture. Farther east is another large section of mixed second growth forest.

Wildlife

The various wildlife species affected by development of the Cathcart site are itemized by vegetation subcategory in the species list found in Appendix B. The vegetation subcategory in conjunction with the wildlife species list can be viewed as an index to an ecological community. These communities, given some variance, should remain constant throughout the life zone.

Habitat for wildlife is essentially defined by vegetation. Selection of the vegetation life zone subcategories was done with due consideration to wildlife. As previously mentioned, a vegetation type in conjunction with a number of associated wildlife species, together form a community. The site includes several overlapping communities which increases its species richness. Though the number of species is large, the total number of organisms is small compared to local or regional populations. The communities found on the site are common and typical of Puget Sound's rural developing areas. Wildlife species common to the various life zone subcategories utilize the area for residence. In other words, shelter is found, foods are secured, and propagation of species results.

The site is not indicated on the "Zoological Elements" map of the Army Corps of Engineers, Environmental Reconnaissance Inventory of the State of Washington, 1973, for having unique zoological or wildlife attributes.

There are no rare or endangered species known to utilize the site. There are no rare or critical habitats on the site.

Air Quality

There is no existing air quality data in the vicinity of the proposed landfill site. Any concentration of pollutants in the area is due primarily to human activity. Minor quantities of methane gas are emitted from the decay of vegetative matter on the heavily wooded site. It is expected that a low concentration of pollutants exists in the study area because of its low density rural characteristics and absence of heavily traveled arterials.

The Washington State Department of Ecology did acquire data on two of the primary vehicular pollutants, carbon monoxide and hydrocarbons, at a site in the center of Everett in 1971 and 1972. The values obtained were indicative of concentrations to be found in medium size urban areas. While the extremely low population density of the study area precludes extrapolation of Everett data for the proposed landfill site, it is interesting to note that the one hour standard for carbon monoxide was not exceeded during the 18 months of measurements in Everett. Hydrocarbon data obtained at Everett did not permit comparison to guidelines since they represented total hydrocarbons rather than non-methane hydrocarbons.

Scenic Values and Aesthetics

The combination of the natural features of the Snohomish River Valley and the backdrop of the Cascade Mountain Range provide the viewer with a positive aesthetic impression of the region. Man-made features in the immediate vicinity of the Cathcart site are low density rural use. The site itself consists of undeveloped land with the western 160 acres covered with fir and alder trees and low brush. The closest city to the site is Snohomish. Cathcart and Clearview are small commercial centers and do not interrupt the rural low density atmosphere of the area.

Historical and Archaeological Values

Approximately four miles north of the Cathcart site is the City of Snohomish. Snohomish has been nominated to be placed on the State Register of Historic Places. Washington State's Advisory Council for historic preservation will consider taking action in the near future. The City has buildings that were constructed around the turn of the century. There are no known archaeological sites located on the Cathcart site or in the immediate region.

MAN-MADE ENVIRONMENT

Population and Employment

Population within an approximate one-mile radius of the site is 900 persons. This figure is based on the latest population estimates from the Snohomish County Planning Department and an existing dwelling unit count. The density of an eight square mile area surrounding the Cathcart site was computed at 110 persons per square mile which approximates the overall density (102 persons per square mile) of the entire census tract in which it is located. This represents a density much lower than that of other census tracts in the unincorporated areas of southwest Snohomish County which average between 500 and 1,000 persons per square mile.

This low density coupled with the relatively high number of persons per household (3.55) tends to characterize the area as a rural, single-family dwelling unit residential area. In other population characteristics such as family income, education, race, age, and sex composition, employment location and housing characteristics, the area's population is not significantly different from other residential areas of the county.

The population of this area is mainly employed in the metropolitan areas of Everett and Seattle as well as other areas of Snohomish County. At present, other than a small mink farm, no commercial or industrial activity is located near the site.

The 1970 census shows 43 percent of the employees in this census tract to be employed in either King County or Seattle, 18 percent in Everett, and 38 percent in the rest of Snohomish County. A mink farm located at the south boundary of the site is an example of the small-scale farming operations prevalent in the area, to the south and east. Larger farms including both dairy and crop exist in the Snohomish River Valley to the north. Such farms are economically viable and represent a significant part of the Snohomish County agricultural industry.

The Clearview commercial district, located approximately two miles to the south, is the nearest shopping area. It serves the surrounding community by offering daily grocery needs and other convenience goods. Weekly grocery shopping and purchase of major items is done primarily in Snohomish, and to a lesser extent in Bothell and Everett.

Community Structure

Community structure might best be described as "loose" for two reasons; first, no schools, parks, or shopping facilities exist within the study area to provide a focus for community activity; second, it would appear that the low density, coupled with the orientation of many residences to major arterials rather than neighborhood streets, does not facilitate the development of strong neighborhood unity. The greatest unifying characteristic of the residents of this area is their common desire for the privacy and seclusion afforded by the rural atmosphere.

Land Use

Land use in the primary impact area can be summarized as predominantly agricultural, open space, and rural residential. The overall density of the study area is approximately one dwelling unit per 20 acres. The typical residential parcel of land in this area ranges between 3 and 10 acres in size. There are very few small suburban type lots.

The structures range in condition from totally dilapidated to very good with their ages ranging from over 50 years to quite recent construction. Many of the residences have accessory buildings on the site associated with minor agricultural activities. These structures range from fair to poor condition. A few mobile homes are located in the area on individual large lots.

New construction has been on a piecemeal basis rather than in large developments or platted subdivisions. No platting activity has taken place in this area in the past decade, with the exception of the Kenwanda development located nearly one mile to the east on the hill overlooking the Snohomish River. Also, short platting (the subdivision of land into four parcels or less) has been quite uncommon in this area, and those lots that have been created by short plats are generally one acre or more in size. Thus, the rural character has remained fairly stable throughout this area.

Few residences are located within close proximity of the proposed landfill site. One residence is located on the site in the southeastern 40-acre area. Four other residences are located within 400 feet of the property lines bordering the southeastern 40-acre area, including one immediately south and three on the east side of Highway SR9. All other residences to the south and east of the site are located more than 700 feet from the site property lines and are separated by dense stands of trees. None of the residences mentioned above overlook the fill area because of topography.

Residences to the north of the site are located along the Lowell-Cathcart Road and are at least 600 feet from the property line. The residences are at least 1,800 feet from the northern boundary of the fill area and are separated by dense woods and an elevation drop of approximately 160 feet. No residences exist within one mile of the western property line of the site. No roads serve this area and it is heavily wooded.

A number of officially adopted public plans have a direct bearing on the present and future use of the land area in the vicinity of the proposed sanitary landfill site. The plan having the greatest influence on this area is Snohomish County's Hillman Area Comprehensive Land Use Plan which was adopted by the Board of County Commissioners in 1964. This plan designates the ultimate use of the project site and the general area surrounding it to be for low density residential development at densities ranging from two to four dwelling units per acre. This ultimate land use designation is shown in Figure 2-7. The plan text indicates that residential density should not exceed two dwelling units per acre in areas having slopes exceeding 13 percent. The plan also designates an area immediately southeast of the project boundary along SR9 (the Woodinville Cutoff) as a suitable site for a neighborhood business center. Finally, the Hillman Area Plan indicates a large tract of land approximately one mile west of the project's western boundary as a potential regional county park site.

The Comprehensive Land Use Plan for the area encompassing the proposed site will soon be updated. While no specific documents and policies have yet been formulated, it is the general opinion of the Snohomish County Planning Staff that current population projections will effect a downward recomputation of planning area densities contemplated by the existing comprehensive plan. The presence or absence of this sanitary landfill is not expected to affect this downward trend.

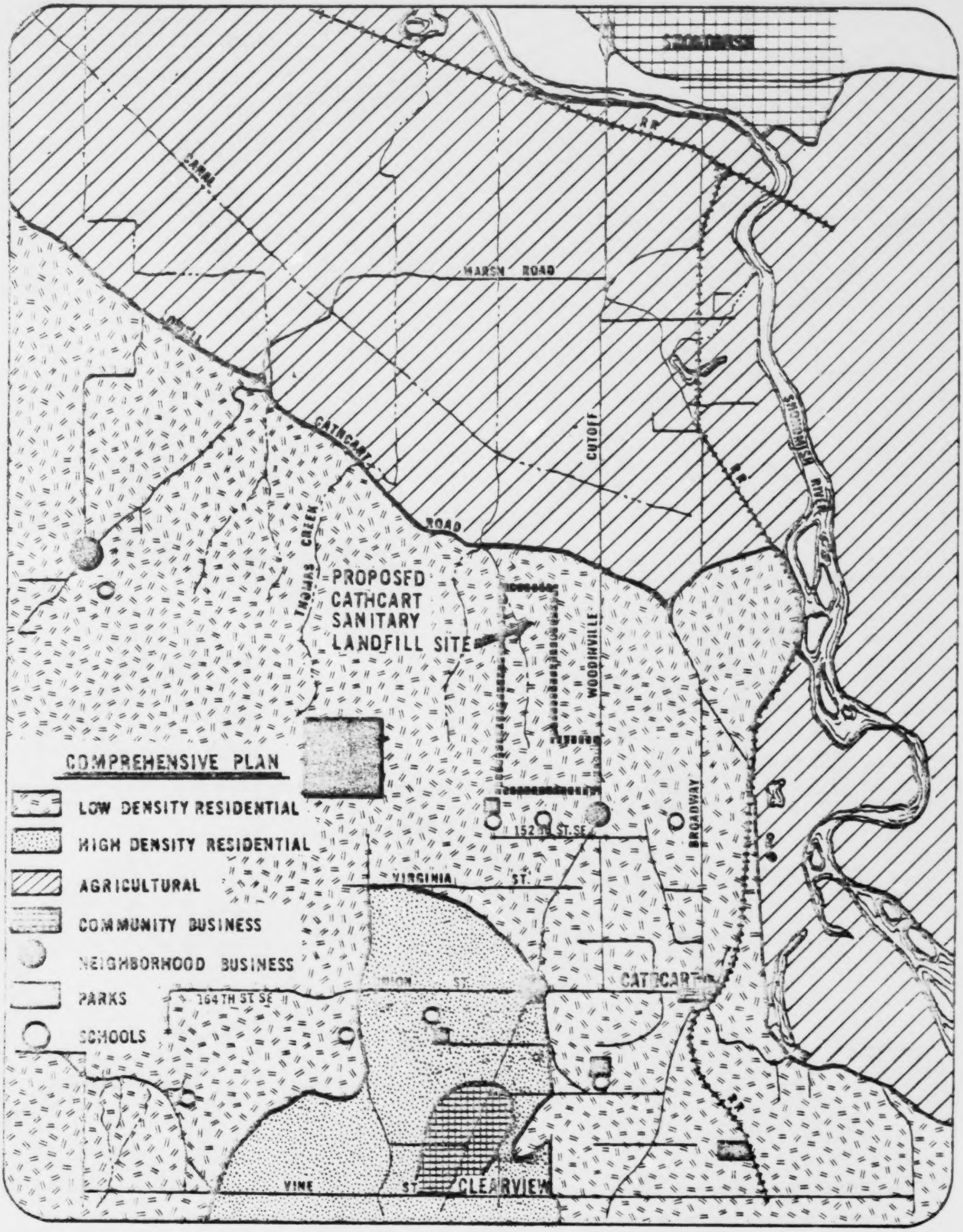
The Lake Stevens/Snohomish Area Comprehensive Land Use Plan adopted by the Board of County Commissioners in 1964 is the second county level plan which directly affects a portion of the area surrounding the project site. This area, which consists of the Snohomish Valley extending north from Rees Corner, has been designated by the plan as most suitable for intensive agricultural use. This ultimate land use designation is also shown in Figure 2-7.

At the regional level, one plan in particular, the Puget Sound Governmental Conference's Interim Regional Development Plan (IRDP), a composite of all local plans in the region, will influence the project site and its environs to the extent that any of the applicable local plans would. The IRDP map depicts the project site and a large area surrounding it, remaining as open and rural areas of low density (residential development should not exceed two dwelling units per acre).

Zoning

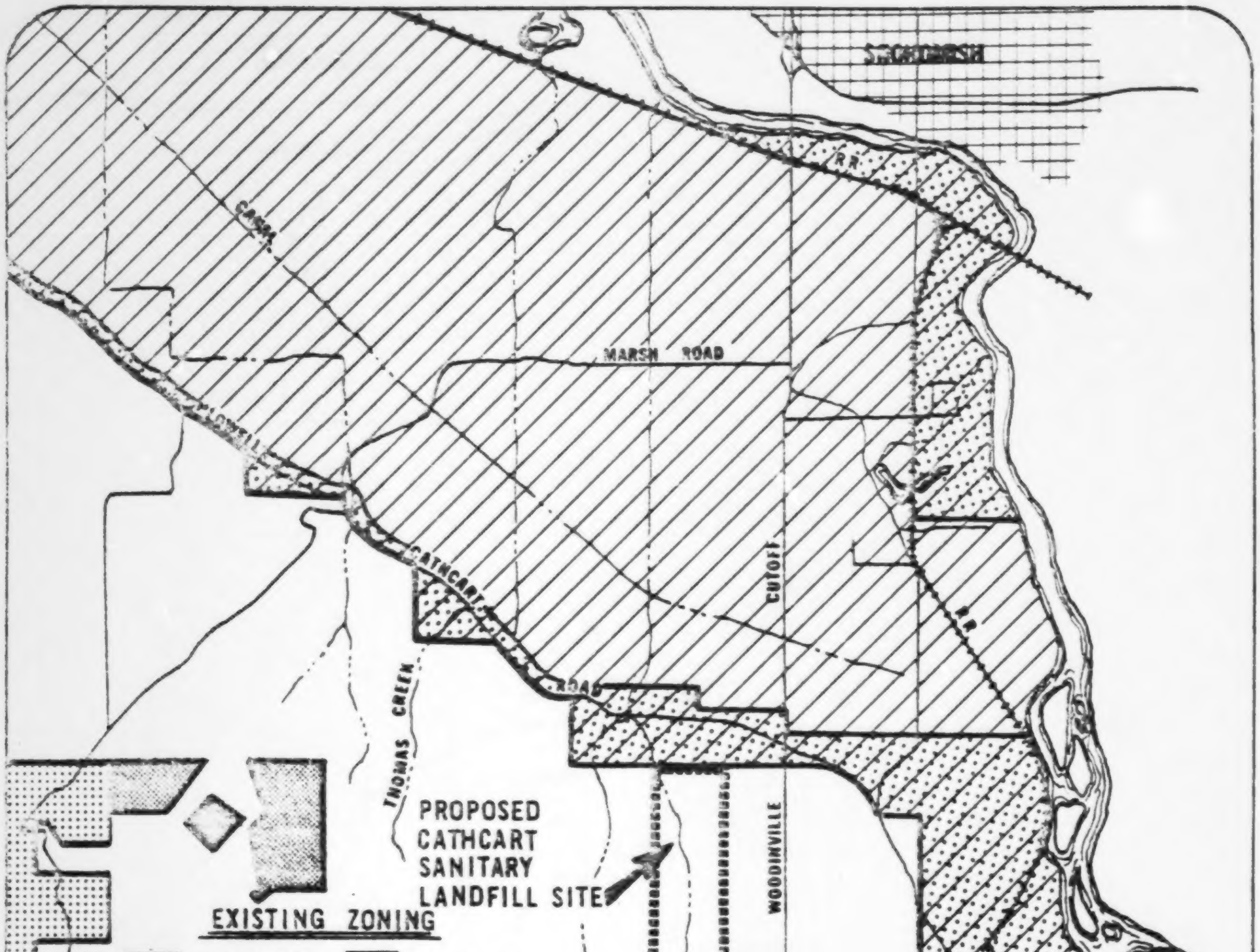
The present zoning is shown on Figure 2-8. The zoning of the site and the surrounding land to the north, east, and west is all rural use. This is primarily an interim zoning classification permitting a wide range of residential, agricultural, and related uses. As described in Section 18.64 of the Snohomish County Code, this zone is designated "to allow the minimum of controls in those portions of the county which are largely rural in character without detrimentally affecting the public health, safety, and general welfare and without adversely affecting the general objectives and policies of the Comprehensive Plan."

In general, the Rural Use Zone is quite permissive in that it allows most of those uses allowed only as conditional uses in residential and


SNOHOMISH
RR
CANAL
MARSH ROAD
CATHCART ROAD
CUTOFF
RR
SNOHOMISH RIVER
THOMAS CREEK
PROPOSED CATHCART SANITARY LANDFILL SITE
WOODINVILLE
BROADWAY
152 ND ST. SE
VIRGINIA ST.
UNION ST.
164 TH ST SE
CATHCART
RR
VINE ST.
CLEARVIEW
COMPREHENSIVE PLAN
LOW DENSITY RESIDENTIAL
HIGH DENSITY RESIDENTIAL
AGRICULTURAL
COMMUNITY BUSINESS
NEIGHBORHOOD BUSINESS
PARKS
SCHOOLS

ULTIMATE LAND USE DESIGNATION

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-7


SNOHOMISH
RR
CANAL
MARSH ROAD
LOWELL
CATHCART
ROAD
THOMAS CREEK
CUTOFF
RR
WOODINVILLE
PROPOSED
CATHCART
SANITARY
LANDFILL SITE
EXISTING ZONING
RR-7200,9600
RR-20,000
MR
RU
AG 10-FP
RU-FP
CB
NB
152nd ST. SE
BROADWAY
VIRGINIA ST.
164 TH ST. SE
UNION ST.
CATHCART
RR
VINE ST.
CLEARVIEW

EXISTING ZONING

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-8

agricultural zones; for example, duplexes, hospital, and commercial kennels. In addition, this zone permits mobile homes on individual lots of 1/2 acre or more. Those uses permitted with the Conditional Use Permit in Rural Use Zones include a much wider range of activities than other residential zones; for example, permanent circus establishments and amusement parks, drive-in theaters, and sawmills.

The only other zone classification prevalent in the area is Rural Residential 20,000. The purpose of this zone as described in the Snohomish County Code "is to provide low density development in outlying areas or where soil or topography require larger lot size." Generally, this zone allows for residential uses on a 1/2 acre minimum lot size. However, it is more permissive than other rural residential zones in the county in that, like the Rural Use Zone, it permits mobile homes on individual lots of 20,000 square feet or more.

As with all other rural residential zones, it permits as conditional uses such things as sanitary landfills, golf courses, public utilities, schools, and churches.

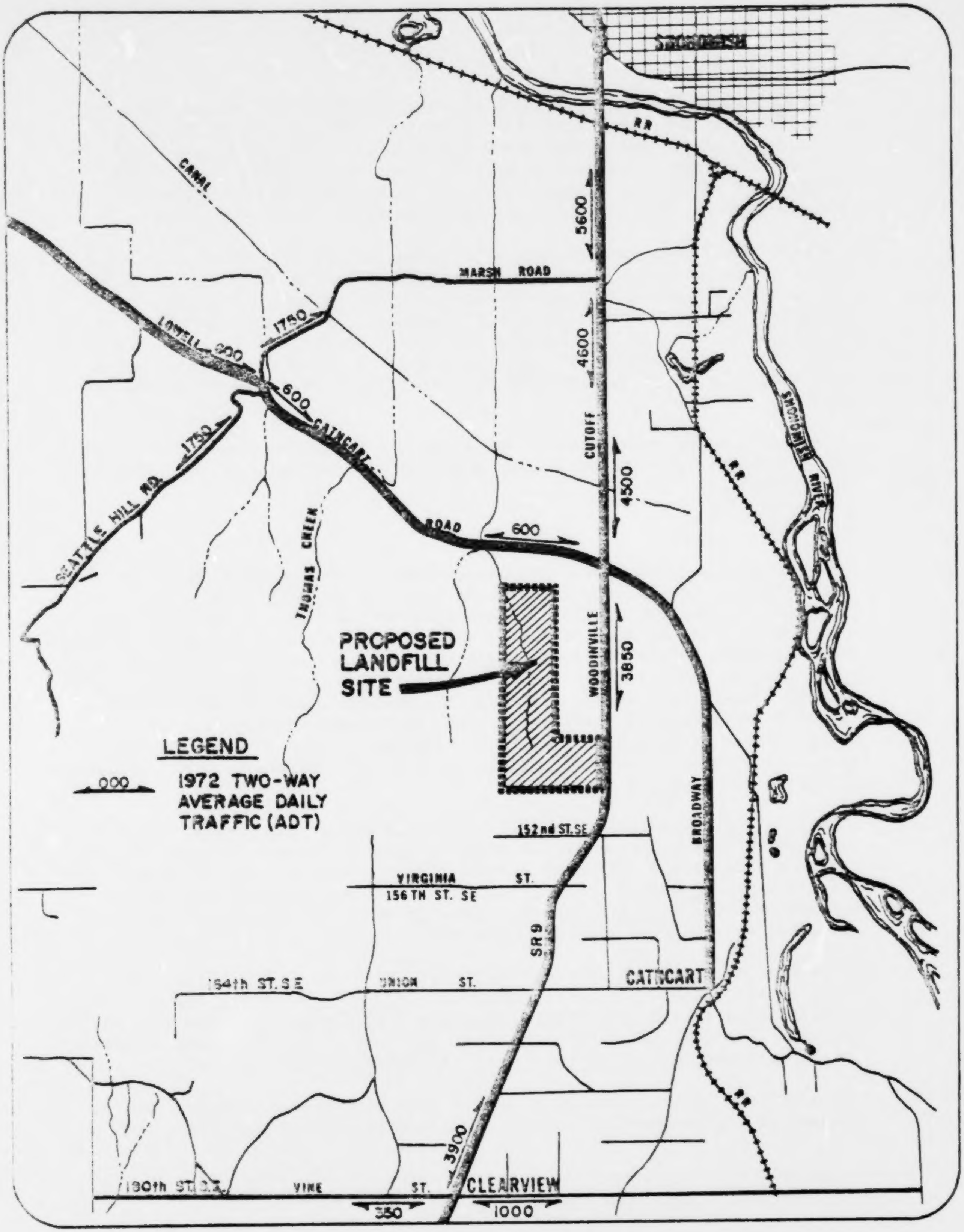
Circulation

The Woodinville Cutoff (SR9) and Lowell-Cathcart Road (Bluff Road) are the only arterials to the immediate vicinity of the proposed landfill site. State Route 9 begins at SR522 (Woodinville-Monroe Highway) near the north King County line and runs northerly through the cities of Snohomish, Arlington, and Sedro Woolley to Sumas at the U. S.-Canada border. State Route 9 is a two-lane paved roadway its entire length and is classified as a major highway with partial access control. The maximum speed posted is 50 mph. The 1972 Average Daily Traffic (ADT) on SR9 between Woodinville and Snohomish ranged between 3,650 and 5,600 vehicles. These volumes are considered a moderate amount of traffic for a major two-lane highway. These arterials are shown on Figure 2-9.

Lowell-Cathcart Road intersects at grade with SR9 at the base of the bluff near the northeast corner of the proposed landfill site. The road follows the west side of the Snohomish River Valley between the Cathcart community and the City of Everett. Lowell-Cathcart Road experienced 1972 traffic volumes of 600 ADT at its intersection with SR9. The road could be characterized as a narrow, winding, hard-surfaced road.

While traffic counts on SR9 for the period 1969-1972 do not establish a trend toward steadily increasing traffic, 1973 ADT counts for SR9 at the Lowell-Cathcart Road intersection indicate a 10 percent increase over 1972 volumes. The 1972 ADT counts are shown on Figure 2-9. Peak hour volumes can be approximated as ten percent of the average daily traffic.

The arterials in the vicinity of the project accommodate existing traffic volumes at a good level of service. Minor delays (less than one minute


SNOHOMISH
RR
CANAL
MARSH ROAD
5600
4600
CUTOFF
4500
LOWELL
600
1750
600
CATHCART
ROAD
600
1750
SEATTLE HILL RD.
THOMAS CREEK
PROPOSED LANDFILL SITE
WOODINVILLE
3850
RR
SNOHOMISH RIVER
LEGEND
000
1972 TWO-WAY AVERAGE DAILY TRAFFIC (ADT)
152nd ST. SE
BROADWAY
VIRGINIA ST.
156TH ST. SE
SR 9
164th ST. S.E
UNION ST.
CATHCART
RR
3900
180th ST. S.E.
VINE ST.
CLEARVIEW
350
1000

CIRCULATION

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-9

duration) are sometimes experienced by SR9 traffic during the morning and evening peak period at the intersection of SR9 and Lowell-Cathcart Road. Oncoming traffic volumes at times require left-turning SR9 vehicles to be delayed in making their turn, thereby holding up vehicles desiring to continue through the intersection. The intersection has not had a high accident experience, however. Seven accidents have been recorded at this intersection for the years 1971 through 1973. The over-four mile segment of highway between Clearview and Marsh Road recorded a total of 62 accidents for the three-year period 1971-1973.

Future improvements to SR9 are proposed in the Snohomish County Transportation Study which was adopted by the Board of County Commissioners in 1972. Specifically, this study contains a recommended improvement program for both the 1972-1977 and 1978-1990 time frames. Improvements to SR9 including addition of a slow vehicle climbing lane between Lowell-Cathcart and 164th Street S. E. are proposed during the 1972-1977 time period. The improvements proposed for the highway system in the vicinity of the project site during the period 1978-1990 are described below in Table 2-3.

Table 2-3

Recommended Improvement Program for Highway System
(Snohomish County Transportation Study)

Road Name	Limits	Improvement
SR9 (New Alignment)	Marsh Road - SR522	Widen existing roadway Construct interchange
128th St. S. E. 132nd St. S. E.	Dumas Road - SR9 (Present)	Widen existing roadway Construct new roadway
132nd St. S. E.	SR9 (Present) SR9 (New)	Construct new roadway
164th St. S. E.	55th Ave. S. E. - SR9	Improve to design standards Widen existing roadway

The Washington Department of Highways indicates that the climbing lane proposed for construction on SR9 is scheduled for construction in the period 1979-1981. Three intersections on SR9 are scheduled to be channelized during the same period - Vine Street, 164th Street S. E. and Lowell-Cathcart Road. The Highway Department indicated that the proposed realignment of SR9 between Marsh Road and SR522 is not scheduled for engineering studies during the next 14-year period.

Noise

Man's subjective response to noise is determined by the sound level emanating from a source of noise and the frequency spectrum of noise. In the event of a proposed new facility, it is important to consider the increase of noise from pre-existing levels.

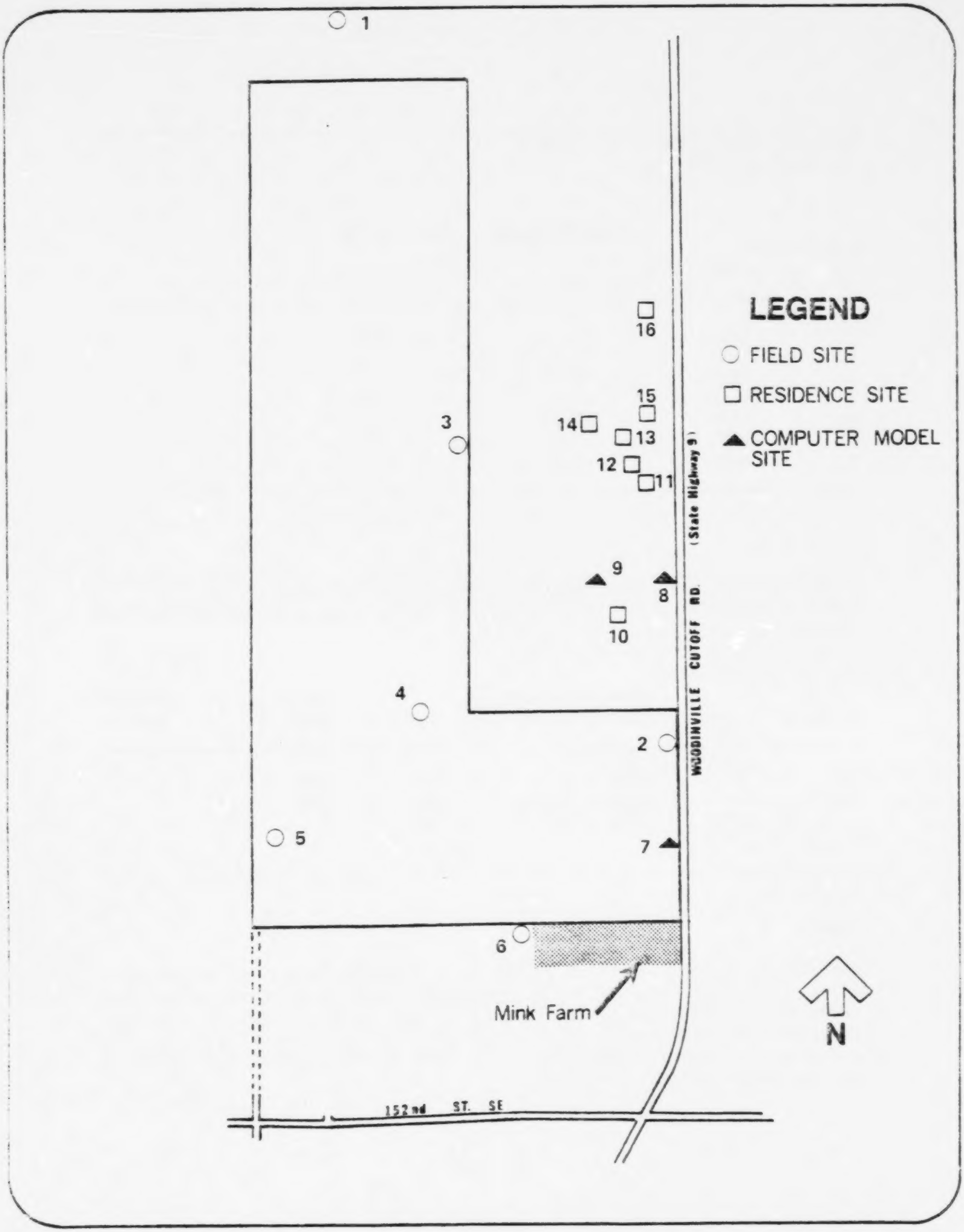
The impact of noise on a community is based on a measurement which represents the level of sound weighed in accordance with the apparent loudness perceived by an average human and is written as dBA. Steady noise levels are rarely observed. Because of the time varying characteristics of environmental noise, it is necessary to provide a statistical descriptor indicative of the dBA level which is exceeded a specified percentage of the time. The three most commonly used percentile levels are:

1. L_{90} (the ninety percentile level): L_{90} is the sound level in dBA which is exceeded 90 percent of the time. L_{90} compares well with the minimum levels read with a sound level meter and is representative of the quietest noise levels present.

2. L_{50} (the fifty percentile or median level): L_{50} is the sound level in dBA which is exceeded 50 percent of the time. That is to say 50 percent of the time the noise is louder than the value indicated. In the absence of loud peaks, such as a distant highway with a uniform traffic flow, the L_{50} provides a satisfactory measure of subjective response to noise impact.

3. L_{10} (the ten percentile level): L_{10} is the sound level in dBA which is exceeded 10 percent of the time and is the parameter of measurement and prediction most often discussed. L_{10} is an indicator of short duration high-level sounds which often cause annoyance.

The Cathcart site and surrounding roads and nearby noise-sensitive receptors used in the noise impact study are shown on Figure 2-10 as indicated. There are several residence sites located between the east site boundary and SR-9. Along the southeast corner of the project boundary is an operating mink farm. Noise measurements were completed at six locations on February 11, 1974, shown as field sites on Figure 2-10. The results of these tests which describe the existing condition are shown in Tables 2-4 and 2-5. This data was then used in the computer impact analysis discussed in Chapter 3.


1
LEGEND
○ FIELD SITE
☐ RESIDENCE SITE
▲ COMPUTER MODEL SITE
16
15
3
14
13
12
11
9
8
10
4
2
5
7
6
Mink Farm
N
WOODINVILLE CUTOFF RD. (State Highway 9)
152nd ST. SE

NOISE RECEPTOR LOCATIONS

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE 2-10

Table 2-4

Measured Existing Noise Levels
February 11, 1974

Measurement Site	Time	Measured Noise Levels in dBA L_{10}	L_{50}	L_{90}
1	1212	54.4	36.8	33.9
2	1240	61.8	44.7	33.9
2	1709	71.8	58.8	45.4
3	1447	48.0	41.9	36.2
4	1528	42.7	38.6	35.6
5	1605	41.4	38.8	37.4
6	1637	43.5	38.8	36.6

Table 2-5

Field Traffic Count Data Associated with Existing Noise Levels Taken February 11, 1974 in the vicinity of the Proposed Cathcart Sanitary Landfill Site

Roadway	Time Period of Traffic Count	mph	Cars/ Hour	Trucks/ Hour
SR9	1240 - 1255	55	116	4
SR9	1709 - 1724	55	280	4
131st St. S. E. (Bluff Road)	1212 - 1227	40	32	0

Utilities

The area is presently served by water, electrical power, and telephone lines. The water is provided by the Cross Valley Water Association with mains located adjacent to the site along SR9. A 50,000 gallon reservoir is located approximately one mile southwest of the site on 156th St. S. E. Although groundwater resources are limited, a small number of residences are served by private wells.

No sewers serve this area at the present time and none are projected in the 1990 plan for the area. It should be noted that although soils in the area are not well suited to septic systems, there is no foreseeable need for sewers due to the very low density of development projected for the area.

No natural gas lines are present in the area; the nearest service extends to 700 feet north of 180th (the Clearview shopping area). No major utility corridors are located in the area. However, two miles to the west of the site, the Seattle City Light power lines cross the planning area roughly parallel to the Seattle Hill Road.

Water and Sewer District Plans which affect the area surrounding the Cathcart site:

- o WASH-USE-1 Sewer, Water, Solid Waste, Storm Drainage Studies
- o Farmers Home Administration Sewer and Water Study
- o Cross Valley Water Association Plan
- o Fircrest Sewer District Plan
- o Silver Lake Water District Plan

CHAPTER 3

ENVIRONMENTAL IMPACT

GENERAL

Environmental impacts from the proposed action occur in three phases. The first phase includes those impacts associated with the construction and site preparation prior to operation of the sanitary landfill. These first phase impacts are classified as "short-range impacts." The second phase includes those impacts associated with the operation of the sanitary landfill at the site and are classified as "intermediate-range impacts." The third phase includes those impacts occurring after completion of landfill operations and are classified as "long-range impacts."

TOPOGRAPHY

The proposed action has substantial impact upon the topography of the Cathcart site by its very nature - landfilling. The fill sections will change the shape of the valley running through the site and affect the existing character of the land. This continual topographic change will occur over the life of the project.

The proposed action will not affect the topography of land surrounding the site. The proposed action may, however, indirectly influence or cause development of supportive facilities, which could alter area topography. The addition of a truck climbing lane on SR9 from its intersection with the Lowell-Cathcart Road extending south up the hill would be an example of such ancillary facility. Construction of such a lane would cause widening of the existing highway with a resultant topographic change. These changes, if determined to be major actions in themselves, would require their own environmental assessment.

Short-Range Impact

A minor change in topography will take place during the site preparation and facility construction phase. A roadway will be constructed leading from the site access point on SR9 west and then south along the western boundary of the site to the northern portion. The roadway will follow the natural topography and the construction will consist of clearing, minor grading, and importing roadway base materials. The land for buildings will be cleared and leveled. Other topography changes will take place in the area prepared for general waste disposal where soil will be excavated and stockpiled during initial site preparation.

Intermediate-Range Impacts

During operation of the sanitary landfill site, topography on the 56 acres developed for waste disposal will continually change. As waste is deposited at the site and covered with earth, existing grades will be raised.

Long-Range Impacts

The existing site topography within the 56-acre disposal area will be raised from 20 to 70 feet in various locations at the completion of landfilling operations. The final elevations and contours (shown in Figure 3-1) have been selected to provide large, gently sloping areas suitable for developing both active and passive recreation facilities. Large areas will be left in their natural condition. The final topography should not have noticeable impacts, however, since adjacent property owners' views will not be affected and existing drainage area patterns outside of the site will be preserved.

The holding ponds and diverted creek (on-site) will remain to provide future surface water runoff control and should be developed to enhance the visual aesthetics of the site. The paved, double lane service road will remain as a permanent landmark and can be used to provide vehicular access to the site for future use.

Remedial Measures

The site will be developed in stages so that only a small portion of the site is interrupted at any one time. This will minimize impacts from short-range changes in topography. Topography changes will take place according to an established plan taking into account the surrounding land forms and the desired final use for the site. In this way, impacts resulting from topography changes should be minimized.

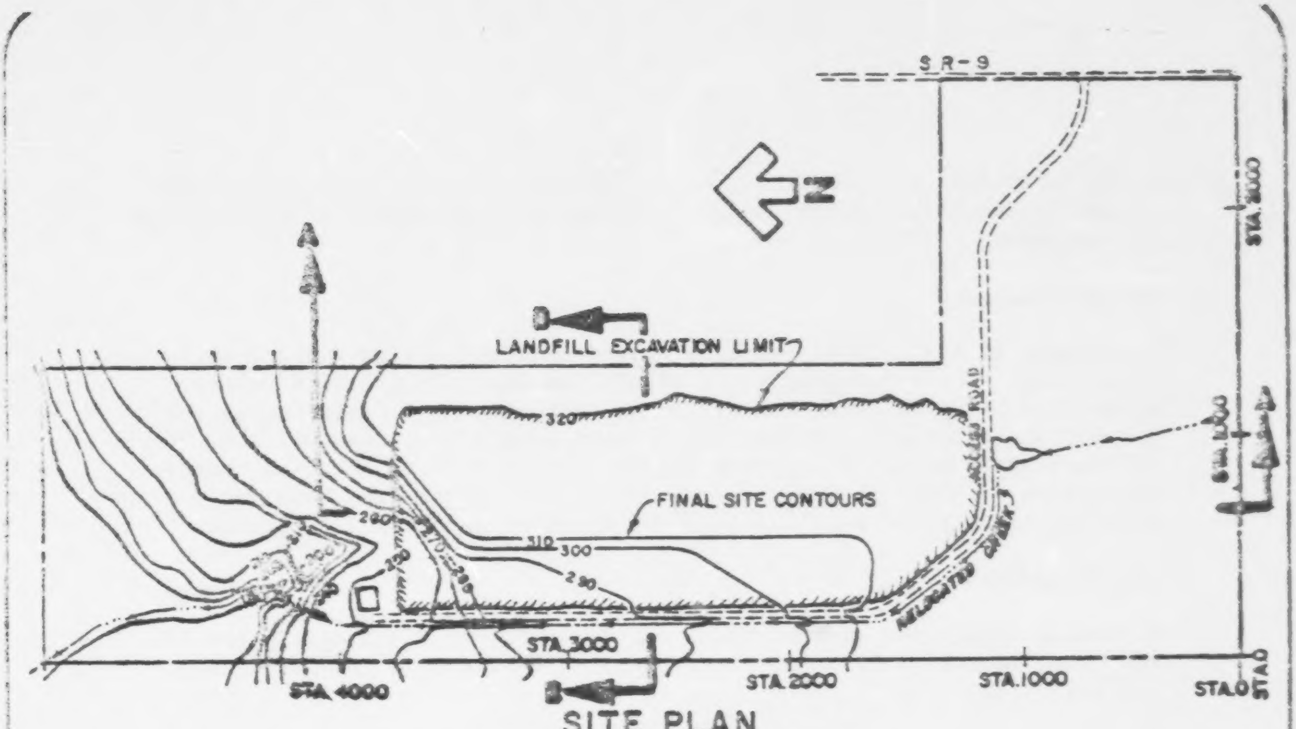
On-site structures used during the operational phase of landfilling should be removed from the site if not usable or compatible with final site use.

GEOLOGY AND SOILS

Short- and Intermediate-Range Impacts

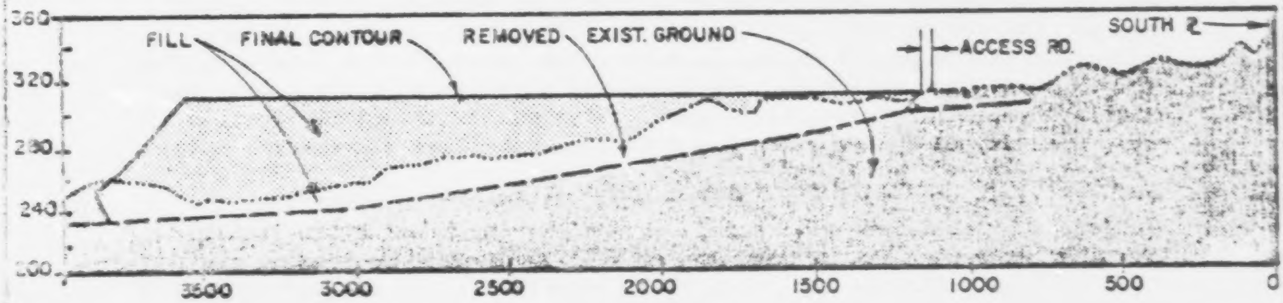
On-site soil materials have high density and high silt content. While silty soils possess beneficial characteristics such as low permeability in place, they may also cause problems in excavation and later in storage and utilization. Excavation will require large equipment. The high silt content with related moisture sensitivity will cause storage and compaction problems.

The excavated soils will be stored in berms at various locations on the site for use as future cover material. Excavation and storage volumes for each stage of landfill development will be large, and therefore, will require the use of heavy earthmoving equipment. The silty on-site soils and stored soils become muddy during wet weather. Collection vehicles


S R - 9
N
A
LANDFILL EXCAVATION LIMIT
320
FINAL SITE CONTOURS
310
300
290
280
270
260
ACCESS ROAD
RELOCATED DRAIN
STA.3000
STA.2000
STA.1000
STA.4000
STA.0
STA.1000
STA.2000
B

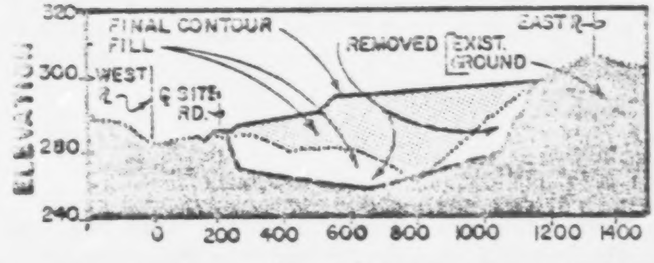
SITE PLAN

SCALE: 1" = APPROX. 750'


360
320
280
240
200
FILL
FINAL CONTOUR
REMOVED
EXIST. GROUND
ACCESS RD.
SOUTH ℄
3500
3000
2500
2000
1500
1000
500
0

NORTH-SOUTH PROFILE "A-A" THRU ℄ OF SITE

HORIZ. SCALE: 1" = 300'
VERT. SCALE: 1" = 310'


ELEVATION
320
300
280
240
FINAL CONTOUR
FILL
WEST ℄
℄ SITE RD.
REMOVED
EXIST. GROUND
EAST ℄
0
200
400
600
800
1000
1200
1400

WEST-EAST PROFILE "B-B" THRU 55 ACRE FILL AREA

HORIZ. SCALE: 1" = 300' VERT. SCALE: 1" = 310'

FINAL SITE TOPOGRAPHY & SOIL STRATIFICATION

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT – FIGURE 3-1

could carry mud onto public highways. Stored soils in berms could erode or become unstable. Silty soils also generate dust easily after prolonged dry weather.

Remedial Measures

Mitigation of soils impact will be through project design and operating procedures. The major portion of excavation and stockpiling for each stage will be undertaken during the summer months to minimize muddy conditions and duration of noise. Soil berms used for storage will be covered or seeded with grass to minimize erosion and to control water saturation. Collection vehicles will travel nearly one mile of on-site road and through a collection vehicle wash facility before entering the public highway.

Long-Range Impacts

Following completion of individual stages of the fill and completion of the total 56-acre fill area, the geology will have been changed within the fill area.

Figure 3-1 also indicates the anticipated change in surface geology brought about by a number of lifts (a layer of compacted solid waste cells, each enclosed with earth cover material) placed in the fill area. Initially, the waste-to-earth proportions will be approximately 25 percent earth. The proportions will change slowly over the years as the organic materials in the wastes decompose into gases, water, and a humus-like residue. Some inert materials like glass and plastics will break down very slowly. Decomposition of the organic materials occurs at its fastest rate when oxygen is available and when moisture flows through the wastes.

The fill area will settle to fill voids left by the decaying organic materials. Settlement will occur for a number of years after landfilling has been stopped. Future uses of the fill area would be limited since uses such as buildings and roads would require special and more expensive construction procedures due to the uneven settling.

Remedial Measures

Mitigation of long-range geology and soils impacts will be through project design and selection of appropriate future site uses such as: open spaces, parks and recreation areas. Drainage and grade problems resulting from uneven settlement will be corrected by filling the depressions with earth.

WATER QUALITY AND DRAINAGE

The installation of a sanitary landfill at the site requires extensive alterations to the natural ground and surface water patterns to prevent pollution of these flows. Four types of ground and surface waters appear at the sanitary landfill site. These are:

1. Off-site surface runoff: Surface waters originating from precipitation off the site and entering the site through overland flow.
2. On-site surface runoff: Surface waters originating from precipitation on the site.
3. Off-site groundwater: Groundwaters entering the site through pervious soil strata.
4. Leachate: On-site groundwater polluted by water percolation through solid wastes.

If left uncontrolled, these sources of water will leave the site through surface or groundwater flow and will be polluted by leachate and siltation associated with the solid waste disposal operation. This polluted water would degrade the quality of ground and surface waters leaving the site, as well as presenting a health problem.

Short-Range Impacts

During the site preparation and construction phase, facilities will be constructed to intercept and divert both the off-site surface and groundwaters around the fill area. The creek diversion and road construction activitiy could result in the siltation of the intermittent creeks on the site. The construction activities associated with the development and preparation of other site features could also result in siltation of surface runoff, if sufficient quantities of rainfall enter the site during the construction phase.

Remedial Measures

Construction activities will be scheduled for the summer months when the intermittent creek flow and rainfall in the area is minimal. Projects will be sequenced to provide control facilities near the start of the site preparation stage.

Intermediate-Range Impacts

On-site surface runoff from the cleared and excavated stages of the fill area, from the area being filled, and from previously filled stages, will carry considerable siltation and a minor amount of organic material from the open daily working face. Groundwater flowing from the fill area (leachate) will contain contaminants. Both the sediment and leachate contaminants could have a large impact on the seasonal creek as well as operations in the fill area. The remedial actions for protecting water quality could change the natural drainage characteristics from the 56-acre fill area which represents about 12 percent of the approximate 460-acre watershed above the fill area.

Remedial Measures

Surface and groundwaters from outside the 56-acre fill area will be intercepted by the creek diversion and carried to the north end of the site for discharge back into the original creek bed. The creek frequently dries up in the summer. A dam below the site and a box culvert at Lowell-Cathcart Road block fish migration. A pond will be installed in the creek bed at the upstream diversion point to hold storm runoff from the 420-acre upstream watershed for purposes of controlling peak flows and flooding downstream of the pond. All surface runoff from within the fill area and most water infiltrating into the fill area (some will be lost to evapotranspiration) will be treated and held in a settling basin prior to discharge into the original creek bed near the north end of the fill area. These facilities will affect the drainage characteristics by controlling peak storm runoff flows and possible flooding downstream of the site. Creek flows should be spread more evenly over a longer period of time and it may be possible to keep the creek from drying up in the summer. The annual volume of water may increase or decrease slightly due to modifications of the surface runoff and evapotranspiration characteristics of the fill area. The holding pond and the settling basin will be left after the landfill is complete and could be used for recreational purposes compatible with future use of the site.

Surface runoff from within the 56-acre fill area and from the few acres east of the fill area will be diverted to the on-site runoff settling basin to allow silts to settle out of the water before it is discharged into the original creek bed.

The on-site soils with high silt content will be used as intermediate cover on the top of each cell of waste to limit the amount of rainfall that infiltrates into the solid wastes. The sides and bottom of the fill area will be constructed in relatively impervious soils to drain towards the north end of the fill area. A leachate barrier will be constructed over all the bottom area and up the sides (15' vertical) to catch all leachate generated. Porous soil strata along higher elevations of the north and east will be sealed to provide a gas barrier and to allow drainage of any leachate generation through a layer of gravel placed on the eastern side slope. A drain will be placed along the center of the fill area and all leachate will be collected in a gravel back-filled, lined trench across the northern end of the fill area. A perforated pipe in the trench will allow leachate to drain by gravity to a pump station located north of the fill area. The collected leachate will be subjected to biological and chemical treatment and will be disinfected by chlorination, monitored for contaminants, and then will be discharged to the on-site runoff settling basin and eventually to the intermittent creek.

A water quality monitoring program, started in March of 1974, will be continued during the life of the landfill. Both surface and groundwater quality adjacent to the fill area will be monitored. Water quality in the on-site runoff settling basin will also be monitored.

Long-Range Impacts

The potential exists for contamination of groundwater flows after the landfill operation is completed if these flows come into contact with the waste disposed at the site.

Remedial Measures

The water quality monitoring and leachate control program initiated during landfill operation will be continued after completion of the landfill at the site. If the water quality monitoring program indicates leachate is being inadequately treated, or is not being collected, the source of the problem will be determined and corrected.

ECOLOGICAL COMMUNITY

Vegetation

The site has no significant or unique vegetation communities on a regional perspective. Comparison with the Kelsey and Coal Creek watersheds (King County), and the area defined by the Renton, Issaquah, Black Diamond, and Sumner quadrangles indicates that the vegetation subcategories found on the Cathcart site and adjacent to the site are the common successional conditions found near developing areas. No significant wetlands, Riparian Habitat (water edge), or climax Old Growth Stands are found on the site or adjacent to the site. This site is not indicated on the Army Corps of Engineers' "Resource and Amenities in Washington which should be Preserved or Approached with Care" list. The Botanical Map indicates that site vegetation in terms of the Army Corps of Engineers' inventory is of no particular significance.

Short- and Intermediate-Range Impact

Construction of roads, water control, and maintenance structures during initial development phases will require the removal of vegetation. Incremental removal of vegetation will occur in each disposal subarea as sanitary landfill operations gradually progress.

Remedial Measures

Following construction of immediately needed facilities, slope treatment by revegetation or covering should be completed to control dust and increased quantities of silty surface runoff. In the maintenance and administrative areas, this would be of a more ornamental nature. As landfilling of each disposal subarea is completed, revegetation of the area would be carried out relative to the future use plan. Therefore, at any one time the vegetation would be removed from a moderate area except during transitional phases. Prior to final vegetation planting or landscaping, protective ground cover could be employed. This would hold the amount of totally unvegetated area to a minimum.

Long-Range Impacts

Even though the necessary removal of vegetation by this particular project, in itself, may have little local impact, the aggregate effect of disturbing these areas could have negative regional consequences. These vegetation communities, although common, are presently under developmental pressure.

Continued development may, at some point in time, cause depletion of these communities below a level which is considered desirable by the public at large. A particular project may individually have little effect, but in conjunction with a thousand others the impact could be drastic. Regional or county quotas or acreage by vegetation type established by the appropriate governing body would be one way of controlling the cumulative impact.

Remedial Measures

During final use planning and design, the possible negative regional effects should be incorporated into final revegetation of the site.

Wildlife

When the vegetation as part of a community is removed, the dependent wildlife is also removed. The eventual effect is of killing the wildlife on the site. Due to differences in dominance and health, the particular organisms on the site may not perish, but somewhere, after adjustment, a similar number of organisms will be forced to either migrate to unsuitable habitat and expire, or the population which received the influx will incur increased density dependent mortality. Simply stated, removal of habitat after an adjustment period eliminates the wildlife dependent on the site.

Short- and Intermediate-Range Impacts

Once initial construction begins progressing through operational phases of landfill, the wildlife on and adjacent to the Cathcart site will be affected. Construction and landfill activities will increase present noise levels. The assessment of noise impact is very difficult to evaluate and little or no documentation of noise impact on wildlife exists. A short-run noise impact will probably occur, decreasing as the wildlife affected "learns" that the noise brings no direct threat.

Another impact is with wildlife adjustment. When the vegetation supporting a wildlife community is removed, a number of organisms similar to what was present on the site will expire (Taber, 1970). Though some of the more sedentary and immobile forms may be killed outright, many will migrate to already filled or marginal habitats. After a short period, mortality will remove species which might have become a local nuisance.

The following table indicates the species and numbers likely to be so affected.

Table 3-1

Species and Numbers of Probable Wildlife Existing at the Site

Species	Numbers	References
Deer	3-5	(Brown, 1961)
Skunks	5	(Garcia)
Coyote	5	(Garcia)
Racoon	2	(Garcia)
Fox	1*	(Garcia)

*It is not certain that fox are present on the site.

Another impact is one concerning the possibility of rodents present at the site. If the site is operated according to specifications established by Snohomish Health District, there should be no rodent problem. Should the site develop rodent problems, Snohomish Health District recommends a species-specific toxin - Raticate (Norbormide) - for extermination. According to the Snohomish Health District, this toxin has no detrimental effect on wildlife, man, or his domesticated animals.

Remedial Measures

Wildlife migration to a large block of undeveloped forest west of the site, to the river valley east of the site and to undeveloped areas farther east of the site would be dependent on a vegetation corridor. The site presently allows an avenue for migration between the relatively undeveloped area west of the site and general undeveloped habitat east of the site. The extent of the impact depends largely on the extent and the rate of landfilling.

If some species of wildlife become nuisances on adjacent property, a program for trapping or transplanting may be necessary. Rodents should cause no problems on the site if proper sanitary landfill operation procedures are followed.

Long-Range Impacts

The effect of the landfill in the short run will obviously be detrimental to the wildlife in the area, but the long-range effects could be beneficial. A landfill once completed excludes most development and will be left to some form of open space. If the surrounding area receives more developmental pressure, the landfill site will guarantee some form of natural cover for utilization by wildlife. While some wildlife may reestablish itself in the area, the species composition will most likely be very different from that which now exists.

Remedial Measures

Final uses conducive to the propagation of wildlife will certainly be considered when final disposition is determined.

SOCIO-ECONOMIC FUNCTIONS

Snohomish County Planning Department has prepared population growth projections for the census tracts within the county boundaries. As shown on the following table, the population of census tract 521 (in which the Cathcart site is located) is projected to increase through 1990. Although the population increase is at a higher rate than for the county (128 percent compared to 58 percent for the county), the population density for census tract 521 will not equal the 1970 county population density until 1980.

Table 3-2

Projected Population Census Tract 521 and Snohomish County

Place	Area (Sq.Mi)	Population 1970	Population 1980	Population 1990	Density/Sq. Mi. 1970	Density/Sq. Mi. 1980	Density/Sq. Mi. 1990
Census Tract	50.1	5,116	6,851	11,687	102	137	233
Snohomish County	1,940.0	265,234	311,503	419,155	137	161	216

Source: Snohomish County Planning Department

The project will not have a significant impact on employment. As noted previously, over 61 percent of the employed in census tract 521 work in Everett or King County. The development of the proposed project should not influence the employment patterns of the population. The projected population is not large enough to exert a change in community structure. It is unlikely that the project will significantly affect the desire of inhabitants to organize a local government unit or for annexation patterns to change. If the final use includes community recreational facilities such as a park or golf course, then patronage from the general area may result in the development of a "community" identification.

Short- and Intermediate-Range Impacts

Even though the proposed Cathcart Sanitary Landfill facility has been planned and designed with great effort using the latest technology to minimize environmental effects, some stigma may still be attached to residences and properties adjacent to the site. Deflated land values could occur. It must be concluded that residents and properties adjacent to the landfill site may endure certain hardships.

Remedial Measures

Snohomish County will conduct a Public Relations Campaign to educate people about the sanitary landfill and its final uses. This should help to remove preconceived, possibly erroneous ideas which would tend to depress property values. Additional long-term remedial measures include final site uses of a type which would tend to increase the value of adjacent properties, such as guaranteed open space in the form of parks or golf courses.

LAND USE AND ZONING

The Cathcart site is located in an area which could be characterized as low density rural residential. The overall area density is approximately one dwelling unit per 20 acres; however, along the eastern site boundary a number of residences exist on land parcels around three to ten acres in size. The present zoning for the site is rural use. Sanitary landfill operations are allowed as a conditional use.

Another factor to be considered is that although the project area is 200 acres, only 56 acres will actually be utilized for landfilling. The 56 acres represent only 0.2 percent of the total land area of the census tract 521. Conservatively, if the entire 200 acres were removed from the present land use potential, it would represent approximately 0.8 percent of the total area of census tract 521.

Use of the Cathcart site as a sanitary landfill should not significantly change the demand for residential land in the general project area, should not change land use patterns and will not require a zoning change. It is also unlikely that future zoning changes would be altered as a result of the project.

AESTHETIC

Individuals evalute an experience through the use of all their sense organs. Thus, those families living in the immediate area of the proposed action would arrive at their evaluation of the site by their sense of sight, smell and hearing. Cultural biases determine how these sense-impressions are evaluated by the individual. Noise and air quality are being dealt with in more detail in separate sections of this chapter. However, these factors do influence any conclusions about aesthetic values.

Short-Range Impacts

During the construction phase of the project, individuals living along the roads where equipment would be traveling to and from the site will be subjected to visual annoyances. A road will be constructed from SR9 into the site at the beginning phase of the project. Local residents who either travel on SR9 or have visual access from their homes to the eastern portion of the site where road construction is taking place will experience temporary visual and noise effects. Noise effects will also be felt by residents living on 152nd Street S.E.

Construction taking place in the fill area during the initial phase of operation cannot be seen either from surrounding roads or from nearby residences because of screening from buffer and reserved areas maintained from the onset of construction.

Intermediate Impacts

During the sanitary landfill operation phase, the following aesthetic impacts could occur:

Aesthetic Variable	Impacts	Individuals Impacted
Visual	Increased traffic on roads leading to the site	Residents with view of roads leading to the site
Visual	Litter blown off the site	
Noise	Associated noise caused by landfilling equipment on the site	Residents within immediate area (will vary during site life)
Noise	Associated increase in nois level from refuse vehicles traveling to and from the site	Residents located along major arterials leading to site
Odor	Associated odors from the site carried by air currents	Residents within immediate area (will vary)
Odor	Associated odors from vehicles transporting garbage to the site	Residents along transport routes

Remedial Measures

Actual visual observation of landfill operations from local residences or by individuals traveling on adjacent roads will be blocked by the topography and vegetation in the buffer and reserve areas. Twenty acres in the southeastern corner of the site have been designated a reserve area as indicated in Figure 1-5. The area contains the only residences and buildings presently located on the site. Retention of the on-site building and the 20-acre reserve would provide a buffer between the site and the residences overlooking that portion of the site.

A buffer zone has been designated around the perimeter of the site as indicated on Figure 1-5. Landfilling or excavation would not be allowed within the buffer zone which will be reserved for screening, perimeter fencing, stable road beds, drainage controls, and future buildings. The width of the buffer zone will vary along different sections of the site perimeter, depending upon use of adjacent properties and use of the buffer zone itself. A 180-foot minimum width buffer area will be provided.

The normal method of litter control is the construction of fences as close to the working face area of the fill as possible. The fences are normally constructed of a fine mesh screen to allow air movement through the fence so that litter is less likely to be carried over the fence. The screen must be of mesh fine enough to trap the litter. A site maintenance program will be implemented, whereby personnel continuously collect litter which is scattered on the site and trapped by the fences. Methods for collecting litter include hand pickup by site personnel and mechanical pickup by truck-mounted vacuum systems.

After completion of sanitary landfill operations, the site will be converted to a use such as open space or active or passive recreational use. Visual impact from off-site will remain negligible due to buffer areas. On-site visual aspects will be a function of the final use, but should provide the viewer with a positive effect of a landscaped or open space type setting. Odors from solid waste will not be present and odor from gas generation will be controlled through dissipation or burning.

HEALTH

The health aspects of the sanitary landfill operation will be of importance to the site operators, drivers of collection and transport vehicles, the occasional public visitor, and the nearby community. The areas of concern would be vectors, gas production, water pollution, hazardous materials, barriers to trespass, and safety.

Short-Range Impacts

The potential for health impacts during the construction and site preparation is minimal.

Intermediate-Range Impacts

Vectors

A biological vector is any rodent, bird or insect which transports disease causing organisms to humans. Solid waste can act as both a source of food and harborage for various health vectors in improperly operated solid waste disposal operations.

Remedial Measures

The daily covering and compaction of the refuse with soil in a properly operated sanitary landfill does much to correct this potential problem. If the refuse is frequently covered, it is no longer a source of food or harborage for rodents. The soil cover, if well compacted, will prevent the emergence of flies from the refuse. A potential will exist for birds to feed from the refuse before it is covered with soil. This problem can be alleviated by keeping the working face of the fill as small as possible. A program should also be established for rat baiting on the site to assure that a rodent problem does not occur. The operating procedures for the site shall contain requirements for periodic inspection by the Snohomish Health District.

Gas

Gases produced within a sanitary landfill consist mainly of carbon dioxide, nitrogen, methane, hydrogen, and hydrogen sulfide. Hydrogen sulfide has an obnoxious odor, but would not be of significance from a health standpoint. Methane is an odorless, lighter than air, explosive gas that can accumulate in enclosed structures on or adjacent to the fill, if allowed to migrate underground out of the fill area. The other gases produced exist in high concentrations in the atmosphere and have no health significance.

Remedial Measures

The Cathcart Sanitary Landfill will be constructed to provide a barrier along the bottom and sides of the fill. Gases will be vented to the surface at controlled locations where they can either be burned or dissipated into the atmosphere as required to control odors.

Water Pollution

Leachate flowing out of a landfill can add bacterial, organic and chemical contaminants to the groundwater and surface water. Under certain conditions the contaminants can pollute the waters to where they are unfit for aquatic life, domestic, irrigation, stock watering, or swimming purposes.

There is a slight chance that leachate could contaminate the on-site well (36P1 shown on Figure 2-5.2) and three wells (36G1, 25EM1, and 1H1) within one mile of the fill area. Contamination of the wells would depend upon the quantity of leachate leakage, the pathways of any fractures or previous layers within the sandstone and dense glacial till underlying the fill area, and on distance.

Remedial Measures

The Cathcart Sanitary Landfill will be constructed to provide a barrier around and under the fill area for collection and treatment of leachate prior to discharge into the intermittent creek presently running through the site. Leachate production from the landfill will be reduced, and hopefully eliminated, through the use of tight on-site soils for cover and barriers.

The effluent discharged into the creek must meet state and federal standards. Monitoring will be supervised by both the Washington Department of Ecology and the Snohomish Health District.

On-site soils investigations, to date, indicate only minor fractures and pervious layers in the dense glacial till and sandstone. Permeability tests at a single boring into the sandstone indicated no leakage at pressures equivalent to 12 feet of water depth. Leakage of leachate from the site should be negligible due to the relative imperviousness of the natural soils, the leachate barrier and drains which will be constructed in the fill area.

Surface water and groundwater adjacent to the fill area and four off-site wells (36P1, 36G1, 25EM1, and 1H1) will be monitored by the Snohomish Health District. If contamination of surface or groundwaters occur, the source will be identified and corrected. The wells could be replaced with a public water supply system which is presently available.

Hazardous Materials

In as much as state or local health department personnel are not continuously available to provide written approval of what hazardous wastes should or should not be accepted, a detailed list of hazardous wastes and their individual proper methods of disposal will be published and distributed to operators of the sanitary landfill. Only those hazardous wastes which have been rendered nonhazardous will be accepted. According to the Snohomish Health District's Solid Waste Regulations, it shall be the responsibility of the person causing the hazardous waste to be brought to the site to render such waste nonhazardous.

Barriers To Trespass

The deep excavation cuts along the east side of the fill area, the heavy equipment in the fill area, the leachate treatment facilities and the on-site runoff holding pond would be potential safety hazard areas for unauthorized people entering the site. Those areas will be fenced and provided with warning signs.

CIRCULATION

Short-Range Impacts

The potential for increased traffic volumes on local roads during initial site preparation is minimal. Delivery and removal of heavy equipment will be a one-time operation. The arrival and departure of workers should not significantly affect traffic.

Intermediate-Range Impacts

It is estimated that 40 to 50 trucks will unload at the proposed landfill site on an average weekday. Approximately 10 trucks will unload at the site on an average weekend day, if the site remains open on weekends. Variations from these averages will probably be in the range of plus or minus 30 percent for peak and low days each year.

Trucks may reach the proposed landfill site via major arterials which connect or are planned to connect to SR9, i.e. Maltby Road, 180th Street S. E., 132nd Street S. E., Lowell-Cathcart Road and SR2. Approximately 2/3 of the trucks will enter the site from the north on SR9 and 1/3 from the south. The proposed access to the landfill site is from SR9. The intersection of the access road and SR-9 occurs on a five percent uphill grade from the north. The grade is approximately 1-1/4 miles long with one mile of the grade occurring north of the intersection with the proposed access. The access road will have a grade approaching five percent for nearly 1,000 feet of its length. The point of access from SR9 would occur on a straight section of highway 1/4 mile north of an existing horizontal curve, thus providing over 1/4 mile of sight distance in each direction.

The addition of truck traffic to the significant volume of other traffic on SR9 will reduce the traffic capacity and will increase the potential accident rate of the highway. Speed reductions from near 50 mph to speeds of 10 to 15 mph can be expected for the trucks climbing the five percent grade from Rees Corner. Also, trucks approaching the site from the south on SR9 will be required to slow considerably on the five percent downgrade to safely turn onto the landfill access road. Decreased truck speeds on this two-lane highway will cause a corresponding delay of other vehicles. Being delayed behind slow-moving trucks increases the tendency for the delayed driver to take risks in passing of these trucks. Consequently, the potential for accidents is increased.

Increased truck traffic and other traffic on arterials will increase vehicle conflicts at major intersections. Lowell-Cathcart Road, while it is the most direct route from the core of Everett, is not suited for use by a large volume of trucks because it is a narrow and winding road with short segments suitable for passing.

Remedial Measures

The addition of a climbing lane to SR9, adopted by the Board of County Commissioners and scheduled for construction around 1980 by the State Highway Department, may be required soon after landfill operations begin at the proposed site. A climbing lane would eliminate the delays of vehicles behind slow-moving trucks ascending the five percent upgrade from Ree's Corner. A reduction in the estimated volume of truck traffic approaching the landfill area from the north can be attained by routing trucks via routes south of the landfill site. This reduction in the number of trucks approaching the landfill site from the north would tend to postpone the need for the climbing lane on SR9. In addition, channelization for turning vehicles may be required at the SR9 intersection with Lowell-Cathcart Road.

Long-Range Impacts

Traffic utilizing the site relative to landfill activities would cease after closure of the site. However, traffic corresponding to future site use would continue.

AIR QUALITY AND GAS PRODUCTION

Short- and Intermediate-Range Impacts

The construction and site preparation activities could result in dust generation during clearing and soils excavation. Dust also will be generated by day-to-day waste hauling and covering operations. A water truck will be available for dust control in order to minimize this air pollutant. In addition, the access road from SR9 will be paved.

Air pollution caused by smoke should not occur as burning of the municipal solid wastes will not be permitted. Fire control equipment will be available to put out an accidental fire.

Stumps and debris from land clearing will be occasionally burned under atmospheric conditions that minimize the air pollution potential to adjacent properties and only as permitted by the appropriate regulatory agency.

Vehicular pollutants--carbon monoxide, hydrocarbons, and oxides of nitrogen--will be emitted by trucks hauling the solid wastes and earthmoving vehicles used to prepare the site for disposal of wastes and to cover the wastes after each day's operations. Concentrations of these pollutants are not expected to exceed applicable ambient air quality standards. Low concentrations of these pollutants are expected because of the extremely low population density of the surrounding area and the air mixing of pollutants.

In the sanitary landfill, organic waste is converted into inorganic materials, water, and gases through biodegradation. In the presence of oxygen, the biological activity is carried out by aerobic bacteria and CO_2 is the primary gas produced. After the available oxygen has been utilized by this process, which normally takes several months, the biodegradation is carried out by anaerobic bacteria. In the anaerobic process, CO_2, methane, ammonia, hydrogen sulfide, nitrogen, and hydrogen gases are produced. The volume of gas produced is theoretically 15 cubic feet at atmospheric pressure per pound of volatile solids reduced. In the landfill it can be assumed that 35 percent of the waste is reducible, the density is 1,200 pounds per cubic yard, and the gas production potential over the life of the landfill is 6,300 cubic feet of gas per cubic yard of fill at atmospheric pressure. Although the potential gas production requires a number of years to take place, gas production rates are significant. Since the gas produced can contain up to 50 percent methane, it can represent an explosive hazard if allowed to accumulate in a confined area.

The gas produced at the landfill can have several effects. If concentrated when vented to the atmosphere, odors can result. Since the methane and hydrogen portions of the gas are flammable, fires may occur either in the fill itself or at points where gas is concentrated when vented to the atmosphere. Cases have been recorded where gas has migrated horizontally for considerable distances in the subsurface soils and caused explosions in the basement of structures. The ammonia and CO_2 gases can dissolve in the moisture present in the fill. The CO_2 in part forms a weak acid (carbonic acid) in solution which will react with metals, especially iron, causing the metals to enter the solution. The CO_2 in solution also readily reacts with limestone, greatly increasing the $CaCO_3$ hardness of the solution.

Remedial Measures

The daily covering and compaction of soils on the solid waste will effectively control odors at the site if the operation is properly maintained. A system will be required for venting the gas produced by decaying waste at the site.

A gas barrier and venting system will be constructed during the fill area development to prevent gas migration into soils adjacent to the fill area and to provide controlled venting. The leachate barriers will restrict gas movement through the bottom and sides of the fill area. Gravel-filled trenches, constructed between each daily cell, will allow gases to vent towards the perimeter of the fill area. A layer of gravel will be placed along the eastern and western sides of fill area to allow relatively free movement of gases to the surface of the fill area where they will be vented into the atmosphere through a vent pipe network. The gases will be periodically monitored for odors, and the vent pipes will be fitted with burners if odor control becomes necessary.

Long-Range Impacts

Gas generation can continue after completion of the landfill as the waste decays, with impacts similar to those discussed in Intermediate-Range Impacts.

Remedial Measures

The gas control program initiated during landfill operations will be continued after the landfill operation is completed at the site.

NOISE

An assessment of noise impact upon the surrounding community caused by the proposed sanitary landfill was made by Northwest Environmental Technology Laboratories, Inc. The present background noise was measured for comparison to predicted noise levels generated by the proposed landfill operation.

Noise predictions are made utilizing a computer model which generates an estimated composite noise form (suggestive of proposed landfill operations) and then computes its intensity at various locations. These intensities in the model (as well as the actual site) are modified by distance from the source; natural land barriers, such as topography and vegetation; humidity; angle of perception; wind and reflections.

Sound intensity is measured in decibels (dB). Decibels follow a logarithmic scale rather than a standard arithmetic progression. In other words, two sources simultaneously generating sounds of intensity 60 dB would cause a total sound intensity of 63 dB rather than 120 dB, as in an arithmetic progression. Noise levels of various activities familiar to all are shown in Figure 3-2.

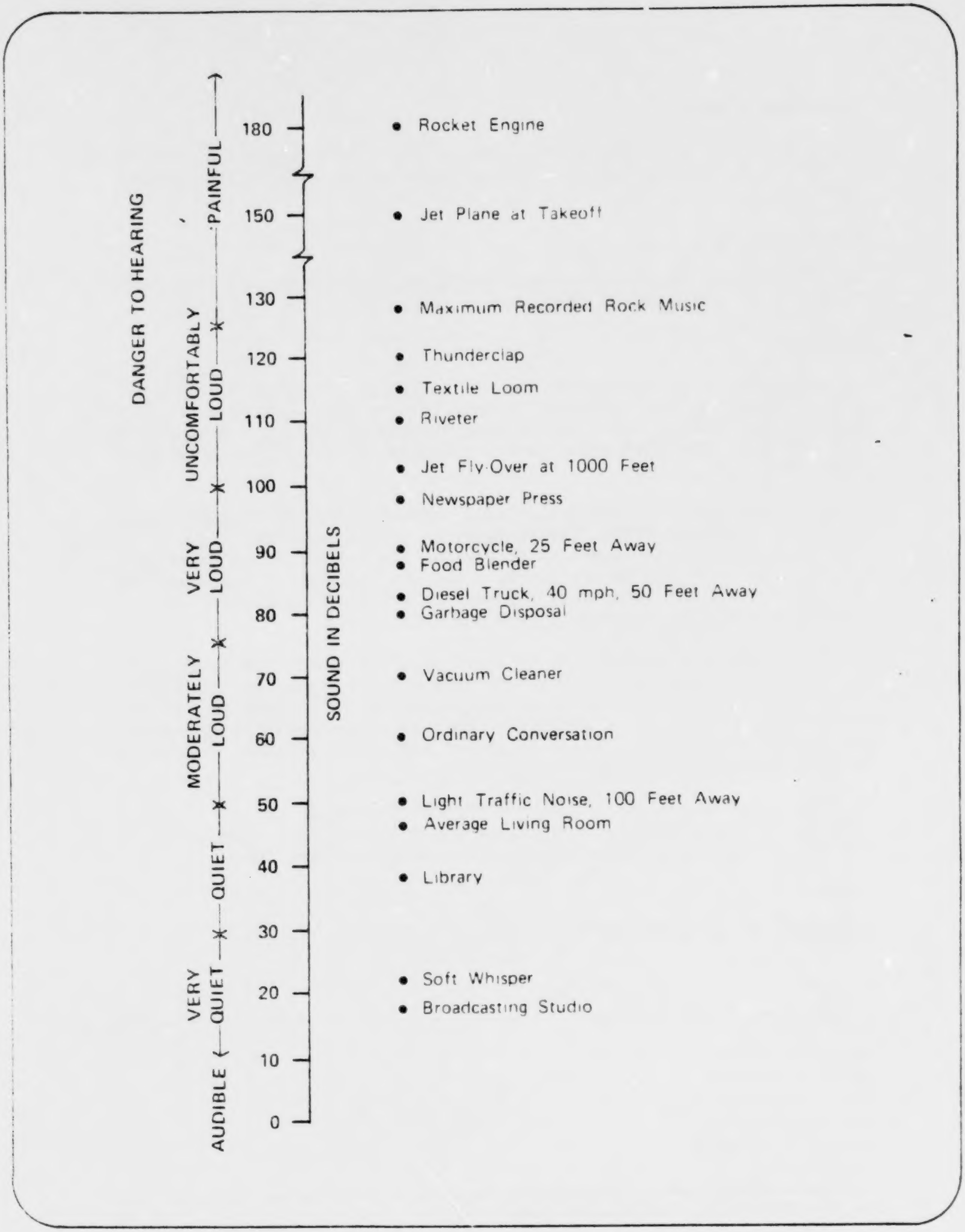
Various noise levels have a range of effects on people who are within a certain physical distance from the origin of the noise. Noise levels and their effects on people are shown in Tables 3-3 and 3-4.

Table 3.3

Estimates of Magnitudes of Noise Effects on People - *In dB(A)*

Effect	Moderate Level	Appreciable Level
Annoyance	40	60
Sleep Interference	40	70
Speech Interference	45	60
Task Interference	55	75
Physiological Stress	*	90
Hearing Damage Risk	70	90
Startle	*	110

Source: "Noise from Construction Equipment and Operations, Building Equipment and Home Appliances," U.S. EPA,



NOISE LEVELS OF FAMILIAR ACTIVITIES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT - FIGURE 3-2

Table 3-4

Increase of Noise Level and Expected Community Reaction

Increase of Noise Above Pre-Existing Level	Expected Community Reaction
Up to 5 dB(A)	Few complaints if gradual increase
5 to 10 db(A)	More complaints, especially if in conflict with sleeping hours
Greater than 10 dB(A)	Substantial number of complaints

Short-Range Impacts

The construction and site preparation will require various types of construction equipment. The noise levels associated with this type of construction equipment with and without feasible noise controls is shown in Table 3-5.

Table 3-5

Equipment Noise Levels in dB(A) at 50 Feet

	Present Noise Level	With Feasible Noise Control
Front loader	79	75
Backhoe	85	75
Dozer	80	75
Tractor	80	75
Scraper	88	80
Grader	85	75
Truck	91	75

Source: "Noise from Construction Equipment and Operations, Building Equipment and Home Appliances," U.S. EPA, 1972.

Remedial Measures

During the initial construction stage, noise exposure to nearby residents will be somewhat attenuated due to topography and the vegetated buffer zones. Construction will be only allowed during regular hours, so as not to disturb evening or sleeping hours. If these restraints fail, then suitable noise controls on equipment will be required to limit noise generation to within acceptable limits.

Intermediate-Range Impacts

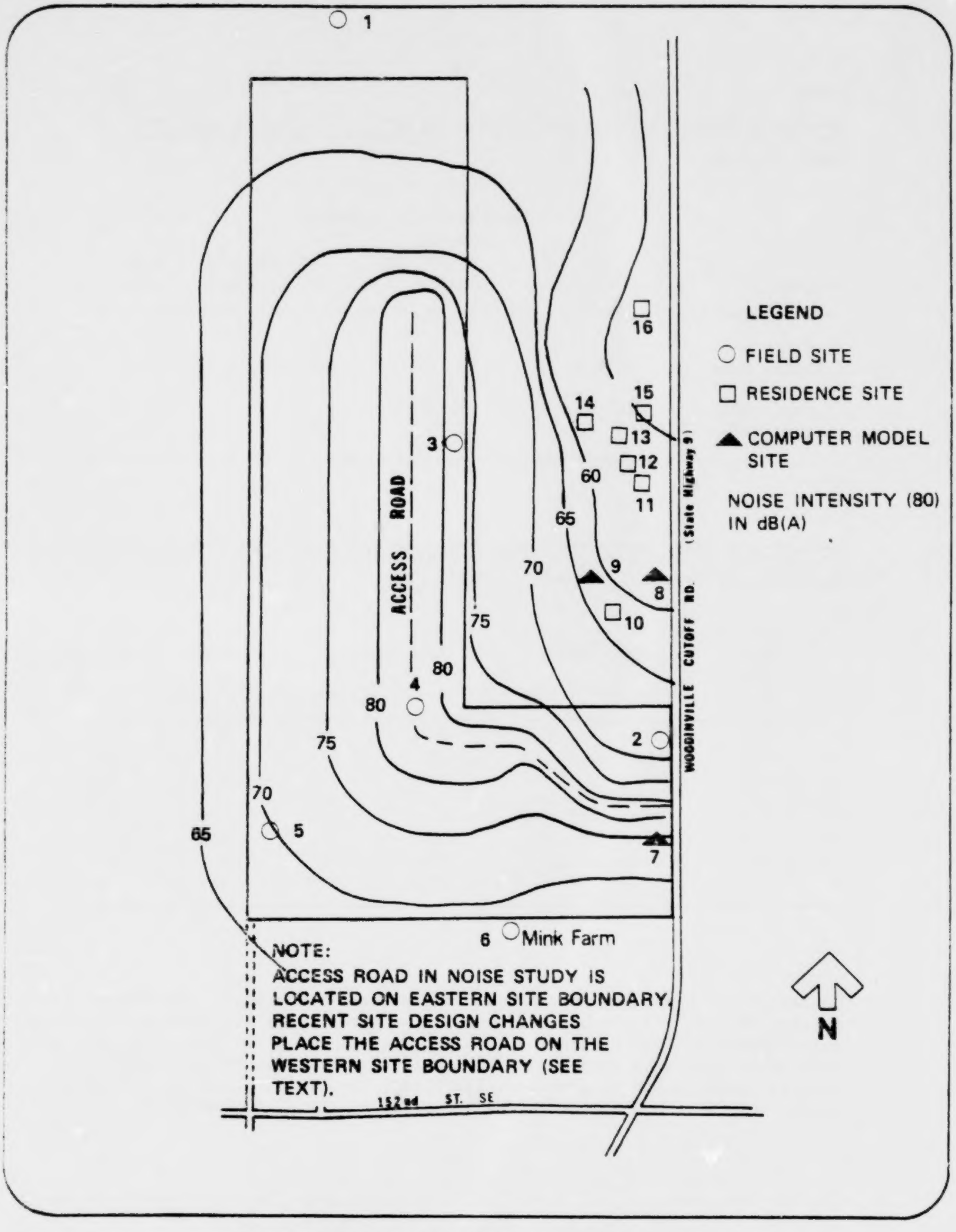
Actual noise levels attributed to landfill operations or refuse haul that would occur at any specific location near the landfill are a function of a number of variables. These variables include: background noise levels already present at that location, the distance from the location to the landfill operation noise source, topography, trees and structures between the noise source and the location, and meteorological conditions at that time.

The proposed sanitary landfill operations will increase noise levels over present background levels on the site and within the surrounding area. Landfill equipment and increased highway traffic will be the source of these increased noise levels.

Reduction of data collected at the Cathcart site and computer modeling resulted in the following noise level predictions:

1. Noise eminating from the landfill operation will occur from egress/access trucks, a single landfill compactor, a dozer and a scraper. The "worst case" noise levels, with respect to residences presently adjacent to the site, would occur if the access road were located along the eastern side of the fill area. The resulting calculated noises are plotted on Figure 3-3. The contours represent lines of equal noise level and provides some indication of the dissipation of noise relative to distance from the site. Constructing the access road along the western side of the fill area (as proposed in Figure 1-5) will lessen the intensity of noise towards the east (presently developed) and will increase noise intensity towards the west (presently undeveloped). The access road will be constructed as shown on Figure 1-5, not as shown on Figure 3-3.

2. Noise levels resulting from the landfill operations within the proposed facility and average hour and peak hour traffic based on predicted increased traffic levels were evaluated. The projected traffic levels are listed in Table 3-6 and the increased noise levels resulting from these traffic conditions, with and without the proposed action, are shown in Table 3-7.


1
ACCESS ROAD
3
4
80
80
75
75
70
70
65
65
60
5
2
7
8
9
10
11
12
13
14
15
16
6 Mink Farm
WOODINVILLE CUTOFF RD. (State Highway 9)
152nd ST. SE
LEGEND
○ FIELD SITE
☐ RESIDENCE SITE
▲ COMPUTER MODEL SITE
NOISE INTENSITY (80) IN dB(A)
N

NOTE:
ACCESS ROAD IN NOISE STUDY IS LOCATED ON EASTERN SITE BOUNDARY. RECENT SITE DESIGN CHANGES PLACE THE ACCESS ROAD ON THE WESTERN SITE BOUNDARY (SEE TEXT).

PREDICTED NOISE ISOPLETHS

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT – FIGURE 3-3

Table 3-6

Traffic Projection in the Vicinity of the Proposed Cathcart Sanitary Landfill Site

		Truck Traffic Increase		
Roadway	ADT	No. of Trucks in Peak Hour	Trucks/Hour on Roadways	Speed (mph)
SR-9 north of Access Road	30	10	20	55
SR-9 south of Access Road	10	3	6	55
Access Road	40	13	26	10

Table 3-7

Predicted L_{10}, dBA Noise Levels at Selected Sites in the Vicinity of the Proposed Cathcart Sanitary Landfill Site

Site	Maximum Noise From Landfill	Highway Noise		Total Noise		Without Development	
		Ave. Hr.	Peak Hr.	Ave. Hr.	Peak Hr.	Ave. Hr.	Peak Hr.
6	72.4	53.0	53.2	72.4	72.5	46.5	47.3
10	63.1	63.0	63.6	66.1	66.4	56.5	58.7
11	56.9	65.0	65.7	65.6	66.2	58.2	60.6
12	56.7	64.0	64.7	64.7	65.3	57.3	59.7
13	56.2	63.8	64.5	64.6	65.1	57.3	59.5
14	57.7	61.6	62.1	63.1	63.4	55.3	57.3
15	55.1	65.0	65.7	65.4	66.1	58.2	60.6
16	52.9	65.0	65.7	65.3	65.9	58.2	60.6

Comparing the predicted "worst case" noise impact with noise guidelines, it is seen that for nearby residential receptors, the total composite noise impact is well within the 70 dBA L_{10} level for applicable land use. Such noise impact is compatible with residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, etc., and is conservatively well within the guidelines cited by the U. S. Department of

Housing and Urban Development as applied to external noise exposure standards for new construction sites.

At these same locations, the increase of noise above pre-existing levels due to the proposed project will vary from 7 to 10 dBA and will occur during the daytime at times of relatively light traffic conditions. From Table 3-4 such increases are expected to result in some adverse community response, which will be mitigated to a limited extent by the fact that the increase in noise level will not conflict with sleeping hours.

The total noise levels which approximate the design noise level for applicable land use will be experienced at the mink farm located at the southeast boundary of the proposed facility. The greatest noise impact to the mink farm would occur when the sanitary landfill operation is concentrated in the southern portion of the project area shown in Figure 1-5. At that time, the increase in noise level could approach 26 dBA above present conditions (based on the original site design which is now altered). During the months of March, April, May and June, while adult mink are giving birth to young and are very sensitive to noise, the adults may kill the young if they are startled or annoyed by loud or unusual noises.

Remedial Measures

Noise levels can be reduced by the use of barriers and ground cover. Noise levels are also a function of relative elevation between the noise source and receptor. The landfill operation noise could, therefore, be attenuated by the topography, in that the landfill operations are conducted at lower elevations than the surrounding ridges on both the eastern and western site boundaries. Possible additional mitigating factors could be the construction of a noise-attenuating fence or the placement of an earth berm and resulting noise barrier directly north of the mink farm. In addition, the concentration of landfill activities within the proposed facility was moved farther away from the mink farm than previously planned in order to reduce noise levels at that site. Any construction requiring loud equipment will be limited to operating in the vicinity of the mink farm only during that portion of the year when adults are not rearing young. Noise control devices have an appreciable reduction effect on noise generated by equipment and could be required on all operating equipment.

Long-Range Impacts

Once landfill operations are completed, noise generation and associated impacts should cease. These would be replaced by noise generation associated with future use.

CHAPTER 4

UNAVOIDABLE ADVERSE IMPACTS

Some adverse environmental effects are associated with the proposed action. Remedial measures which are part of the project design, or proposed in this report for possible implementation, would reduce adverse environmental impacts. These measures could be carried out by project design, public agencies, private organizations, and individuals.

After careful attempts at mitigation, some adverse environmental impacts still remain and are unavoidable.

1. Modification of natural topography will occur.

2. The 56-acre fill area's soil structure will be altered, thus limiting its potential future uses. The soil structure will make a less favorable support for construction of heavy buildings.

3. The natural ground and surface water patterns will be altered.

4. Temporary aesthetic effects of removing vegetation and replacing it with a sanitary landfill site will occur.

5. Wildlife habitat and associated wildlife will be removed during the site life of the sanitary landfill. A possible permanent wildlife reduction may occur if the land use after site completion reverts to an active people-oriented use.

6. Possible decreases in land values and increases in noise levels from landfill operations and truck access/egress will result in social costs to property owners adjacent to the site.

7. Traffic related to the use of the sanitary landfill will increase roads in the region.

8. Noise, some local air pollution, and minimal traffic inconvenience will occur during construction.

CHAPTER 5

ALTERNATIVES TO THE PROPOSED ACTION

Alternatives to the construction and operation of the proposed sanitary landfill at the Cathcart site can be divided into three major categories with the resulting subcategories:

- No-Action
- Alternatives to the Project
    - o Alternative Solid Waste Disposal Systems
        - . Continuance of the present county disposal system
        - . Regional rail haul disposal
    - o Alternative Locations for the Sanitary Landfill
- Alternatives within the Project
    - o Alternative Solid Waste Disposal Methods
        - . Incineration
        - . Pyrolysis
        - . Recycling
        - . Milling
        - . Baling
    - o Alternative Disposal Concepts at the Site
        - . Types of wastes accepted
        - . Types of vehicles received
        - . Starting location of landfill operation
        - . Final elevation and contours

NO ACTION

Two possible situations exist which could bring about the No-Action Alternative resulting in not developing the Cathcart site as a sanitary landfill. These are as follows:

- o Continuance of the present county disposal system
- o Development of another site for a sanitary landfill

Both of these situations or alternatives are discussed in some detail in later sections of this chapter. If either of these situations were to occur, the Cathcart site would not be utilized for a sanitary landfill operation. Thus, the property would be retained in its present undeveloped state, until such time as it would be developed for other use. The possible alternative uses of the property would be determined in most cases by the existing local zoning ordinance, or if a zone change is proposed, by the lists of permitted uses in both the existing or proposed zoning regulations.

The present zoning of the site is Rural Use which is quite permissive in that it allows most of those uses allowed only as conditional uses in residential and agricultural zones. Examples are duplexes, hospitals and commercial kennels. In addition, this zone permits mobile homes on appropriate sized lots and single-family residences. Those uses permitted with a conditional use permit in Rural Use Zones include a wide variety of uses such as permanent circus establishments and amusement parks, drive-in theaters and sawmills.

ALTERNATIVES TO THE PROJECT

Alternative Solid Waste Disposal Systems

Continuance of the Present County Disposal System

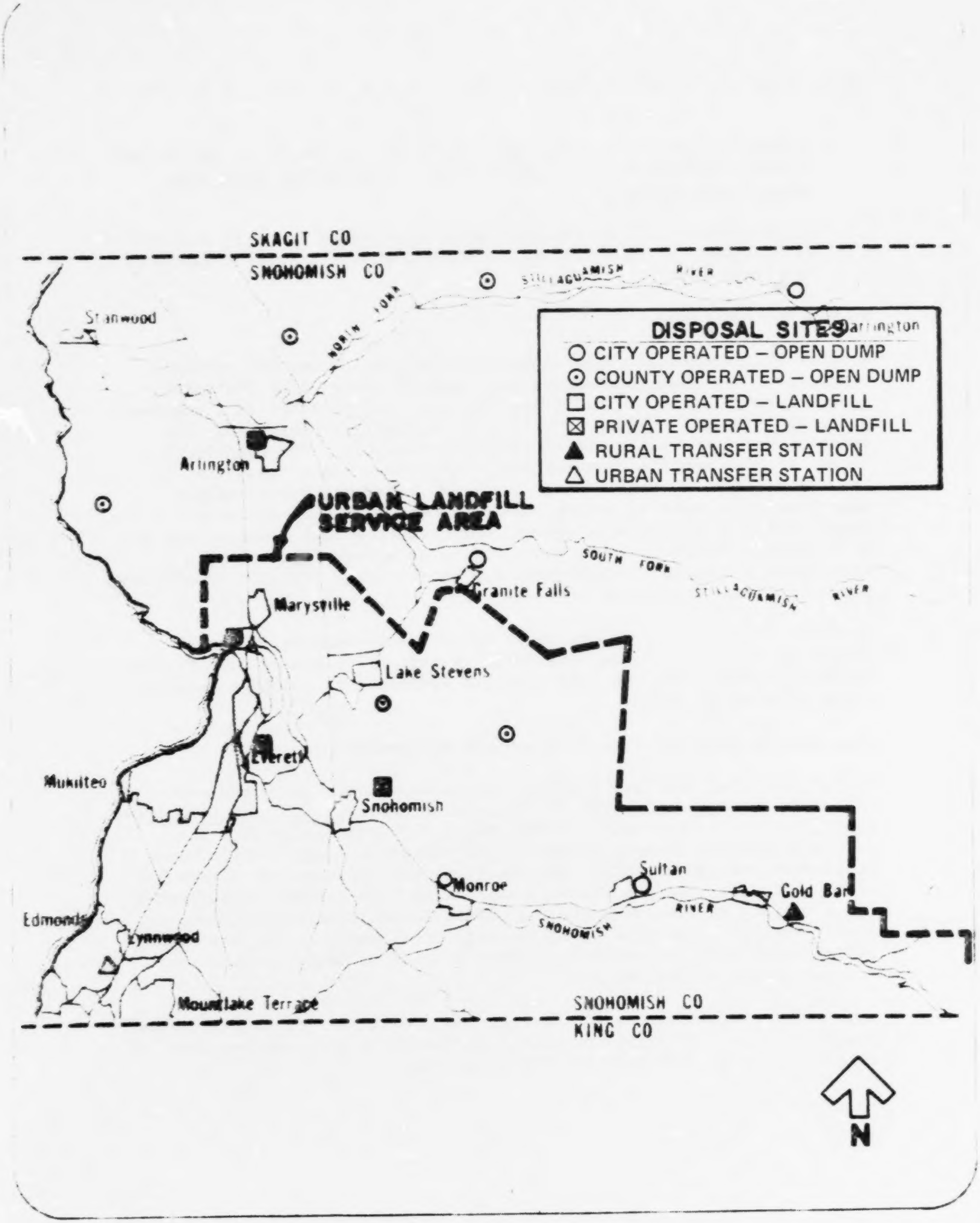
Solid waste disposal operations presently serving the communities in Snohomish County include twelve open dumps and landfills, one rural transfer station, and one urban transfer station. Eight of these are located within the Cathcart landfill service area as shown in Figure 5-1.

The open dumps are characterized by infrequent or no earth cover, windblown paper, litter, odors, flies, rodents, smoke from occasional fires and a general unsightliness. In many instances, the dumps are located adjacent to rivers or streams where contaminated surface runoff and subsurface runoff is allowed to drain into the rivers or streams.

The landfills are previous open dumps where the operations have been slightly upgraded by compacting the waste into smaller volumes and occasionally covering the compacted wastes with earth. No burning on-site is allowed. The daily earth cover reduces many of the visual, aesthetic, animal feeding, fly, rodent, and litter problems of the open dump. However, the landfills can have adverse impacts on surface and groundwater quality and can cause migration of dangerous gasses onto adjacent property.

The Everett landfill, which presently receives the majority of the wastes in the Cathcart landfill service area, will reach its capacity in mid 1975 and must be closed. The other county landfills and dumps are small, have little remaining capacity, and have inadequate physical characteristics for conversion to sanitary landfills. Thus, waste volumes presently handled at the Everett landfill will have to be disposed of at county disposal sites which are inadequate to accept the increased waste loading.

The only Snohomish County disposal site of sufficient capacity to accept the waste volume presently handled at the Everett City landfill is located near Lake Stevens, and is referred to as the Lake Stevens landfill. Even this site is severely limited with respect to size and access. The Lake Stevens landfill was not designed according to sanitary landfill criteria, and does not have proper environmental controls to prevent ground and surface water contamination. The site also has other deficiencies which could be corrected, such as improper waste compaction. It could not be modified to enable suitable water pollution control, however.


SKAGIT CO
SNOHOMISH CO
STILLAGUAMISH RIVER
NORTH FORK
Stanwood
Darrington
DISPOSAL SITES
○ CITY OPERATED – OPEN DUMP
⊙ COUNTY OPERATED – OPEN DUMP
☐ CITY OPERATED – LANDFILL
☒ PRIVATE OPERATED – LANDFILL
▲ RURAL TRANSFER STATION
△ URBAN TRANSFER STATION
Arlington
URBAN LANDFILL SERVICE AREA
SOUTH FORK
STILLAGUAMISH RIVER
Granite Falls
Marysville
Lake Stevens
Everett
Mukilteo
Snohomish
Monroe
Sultan
Gold Bar
SNOHOMISH RIVER
Edmonds
Lynnwood
Mountlake Terrace
SNOHOMISH CO
KING CO
N

EXISTING DISPOSAL SITES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT – FIGURE 5-1

Continuance of the present waste disposal system at this time will result in:

- o Continued use of the open dumps and landfills which are not in conformance with Snohomish Health District Regulations Governing Solid Waste Handling
- o Approximately 150,000 tons per year of solid waste being disposed of at county sites which are inadequate when the Everett landfill is closed in 1975

Regional Rail Haul Disposal

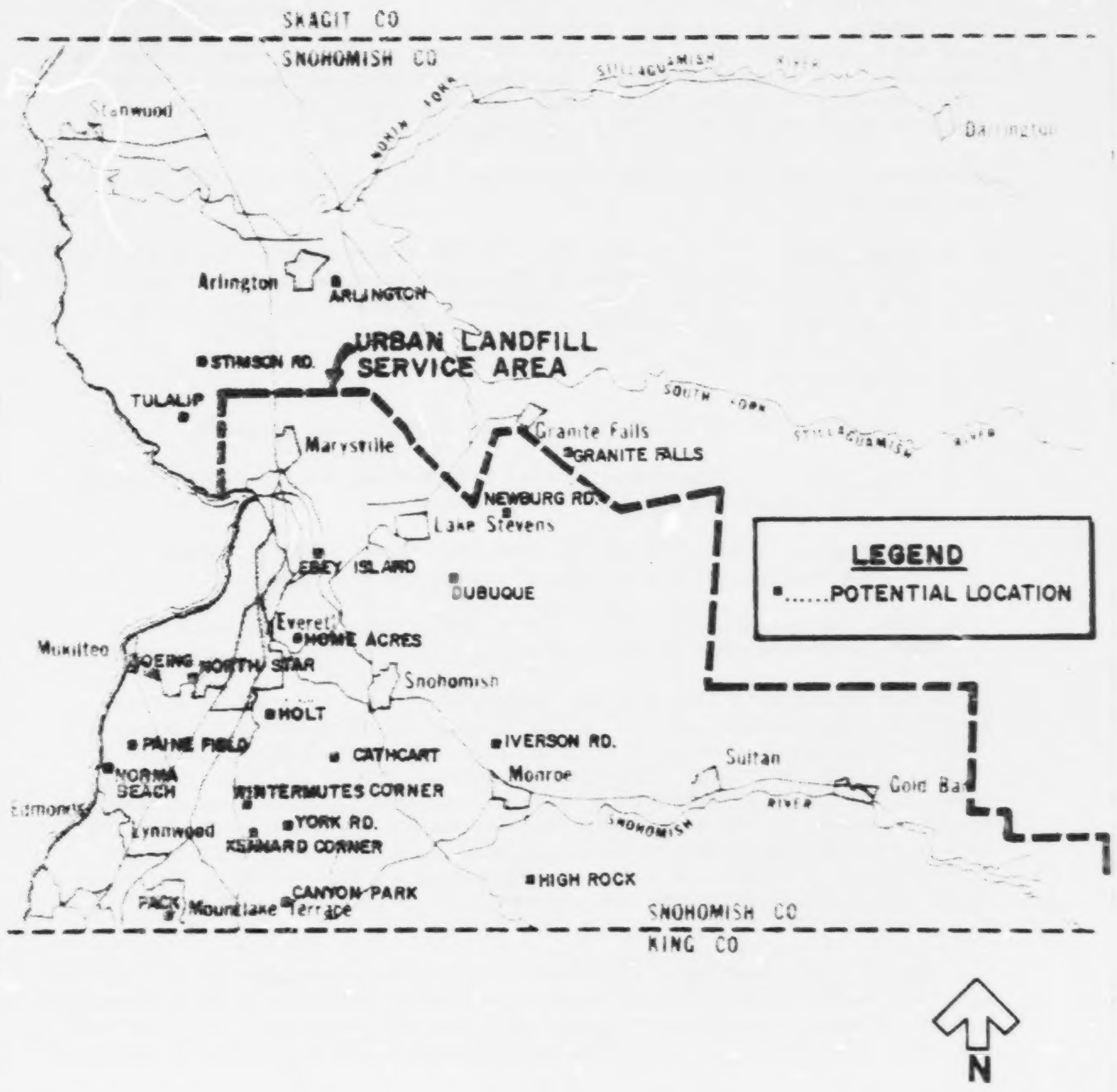
A study on disposal of solid wastes on a regional level was recently completed. The study considered rail haul of wastes from Snohomish, King, Pierce, Thurston, Lewis, Cowlitz and Clark Counties to a regional disposal site at a coal strip mine near Centralia, Washington. The proposal was found not to be economically feasible. The cost for all seven counties would be approximately 30 percent higher than that of local land disposal operations. The cost difference for Snohomish County could be over 30 percent due to longer rail haul distance. A few years lead time would be necessary to construct a rail transfer station in Snohomish County and many years may be necessary to develop the inter-county cooperation necessary to achieve large scales of operation that would make the project possible.

No other locations for disposing of solid wastes outside Snohomish County are currently being considered by regional planning efforts and Snohomish County does not have adequate authority to consider such sites on an independent basis.

Alternative Locations for the Sanitary Landfill Within Snohomish County

Twenty potential sanitary landfill locations within the county were evaluated during preparation of the Interim Report, Solid Waste Management Planning, in Snohomish County, during 1970 and early 1971 and during subsequent investigations by the Snohomish County Public Works Department and consultants. The locations are indicated in Figure 5-2. After evaluation, many sites were eliminated from further consideration for a variety of reasons including physical deficiencies for operating a proper sanitary landfill, excessive site development costs, inadequate land availability, inconvenient access, excessive haul distances and adverse impact on neighbors.

Eighteen locations were identified in the Interim Report as being potentially suitable for a sanitary landfill operation and included the following (refer to Figure 5-2 for location):


SKAGIT CO
SNOHOMISH CO
STILLAGUAMISH RIVER
NORTH FORK
Stanwood
Darrington
Arlington
ARLINGTON
URBAN LANDFILL SERVICE AREA
STIMSON RD.
TULALIP
SOUTH FORK
STILLAGUAMISH RIVER
Granite Falls
GRANITE FALLS
Marysville
NEWBURG RD.
Lake Stevens
EBEY ISLAND
DUBUQUE
LEGEND
■......POTENTIAL LOCATION
Everett
HOME ACRES
Mukilteo
BOEING
NORTH STAR
Snohomish
HOLT
PAINE FIELD
CATHCART
IVERSON RD.
Sultan
Monroe
Gold Bar
NORMA BEACH
WINTERMUTES CORNER
Edmonds
Lynnwood
YORK RD.
KENNARD CORNER
SNOHOMISH RIVER
HIGH ROCK
CANYON PARK
PACK
Mountlake Terrace
SNOHOMISH CO
KING CO
N

ALTERNATIVE SANITARY LANDFILL SITES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT – FIGURE 5-2

Arlington
Ebey Island
Canyon Park
High Rock
York
Cathcart
Holtz Ravine
Norma Beach
Paine Field
Home Acres
North Star
Stimson Road
Granite Falls
Newberg Road
Pack
Dubuque
Tulalip
Lake Stevens

The locations were evaluated as to approximate cost for developing a sanitary landfill, major physical deficiencies, site capacity, surrounding land uses, accessibility, future use, and impact on solid waste collection costs due to hauling distances. The Interim Report recommended a more detailed analysis of the Paine Field, Cathcart, North Star, Canyon Park and York locations prior to final selection of a landfill site.

Subsequent evaluation of these five alternative locations had the following results:

- Paine Field: The site is located in the flight path of the Paine Field Airport and the potential of seagulls attracted to the site by open earth and the wastes could be a hazard to aircraft using the airfield. FAA regulations also restrict the location of landfills near airports. The site was, therefore, dropped from further consideration.
- Cathcart: This site was retained for further consideration.
- North Star: This site was dropped from further consideration because of its proximity to the Paine Field Airport.
- Canyon Park: This site was dropped from further consideration because of poor on-site soils and inadequate drainage.
- York: This site was dropped from further consideration because of poor soils and inadequate drainage.

Three new potential sites, Kennard Corner, Wintermutes Corner, and Iverson Roads, were identified for further evaluation. Initial evaluation of climatic influences, zoning, land use, site access, suitable utilities, soils, geology, hydrology, and drainage indicated that the Kennard Corner location should be rejected from further consideration due to urban development adjacent to the site, nonconforming zoning and major physical problems (poor soils and numerous springs) which would be very difficult and expensive to correct. Concepts and cost estimates for preparing and operating the Wintermutes Corner and Iverson Roads locations as sanitary landfills were developed.

The Iverson Road location was dropped from further consideration as a rural sanitary landfill because only a small portion of the site could be developed and groundwater movement through the site was such that there would be significant difficulties in operating an environmentally satisfactory landfill.

The Wintermutes Corner and Cathcart locations were extensively investigated. This investigation included subsurface soils and groundwater studies, preliminary site engineering and layout, preliminary definition of operating procedures and preliminary cost estimates. As a result of the feasibility study, the Wintermutes location was dropped from further consideration due to high cost of keeping groundwater from flowing into the fill and high land cost.

In addition, the upgrading and continued use of the Lake Stevens landfill was considered as an alternative to the proposed location. Items of concern included the availability of suitable cover material, the conditions of access roads, the availability of a suitable on-site buffer and the impact of past operations upon the development of proper environmental control facilities.

Although the Lake Stevens landfill has the capacity to continue as a major disposal site for at least an interim period of time, it cannot be expected to serve for an extended period. In addition, the site is not served by major arterial highways, and use of the Lake Stevens site would require the continued import of cover material. Proper operation practices would require that cover material quantities be increased over those used at present.

An adequate buffer is available along two sides of the landfill only. Adjacent properties to the south and east are not properly screened from the operation. Also, past disposal practices have prohibited the development of proper leachate controls at the site.

Although continued use would not substantially increase leachate quantities that would be generated from the landfill, some impact in this regard would occur. Proper alleviation of this problem and conformance with applicable solid waste regulations requires the termination of the Lake Stevens landfill operation.

Of the twenty locations evaluated, the proposed Cathcart site was determined to have the best combination of features necessary to construct and operate a sanitary landfill.

ALTERNATIVES WITHIN THE PROJECT

Alternative Solid Waste Disposal Methods

Alternative solid waste disposal methods, while reducing the volume of solid waste, do not replace the need for a sanitary landfill. The sanitary landfill would still be required to either receive residues generated by the various processes or as a backup in case the processes become inoperable due to mechanical failure. These methods will be discussed here, even though facilities to perform these types of waste reduction would not be located on the project site. Acceptance of wastes processed by these methods would constitute an alternative within the project.

The solid waste volume reduction methods discussed are listed below:

- Incineration
- Pyrolysis
- Recycling
- Milling
- Baling

All of these volume reduction operations would require construction of their own site facilities and would not be located at the proposed Cathcart site.

Incineration

Incineration is a process in which the organic carbon portion of solid waste is transformed into gaseous CO_2 and water through combustion. Normally, this results in a 70 to 80 percent volume reduction in domestic waste. In theory, the combustion should be complete with all organic wastes converted. In practice, combustion is not complete and as gases leave the incinerator, they carry with them quantities of particulate matter, some of which contain organic carbon. Because of this, modern incinerators are equipped with additional combustion chambers in which the gases and particulates are subjected to further combustion. The gases formed in the incineration process are primarily CO_2 and steam. A number of additional gases are normally formed, including nitrous oxides, sulfur dioxide and various hydrocarbons. The presence of these gases and particulate matter carried with the gases requires that air pollution control equipment be provided in order to meet air pollution control standards.

The incinerator facility would include an area for receiving the collection trucks and transfer vehicles, large pits for storing the wastes, overhead cranes, furnaces and controls for dust and air pollution. Process water would require treatment or may be dischargeable into the municipal sewer system. The facility could have boilers for reclaiming waste heat as steam, provided that a market capable of using a fluctuating output were available.

Incinerator technology has been adequately proven, although some development work is still required on air emissions controls and corrosion of furnace walls and boilers. The minimum amount of time necessary to ready an incinerator facility for operation would be approximately four years.

The slag, ash and flyash residues from incineration (20 to 30 percent of input weight) would require land disposal with measures to prevent surface and groundwater pollution. The major advantages of incineration include the reduced weight and volume of waste for land disposal and the potential opportunity to reclaim the waste heat as energy. The main disadvantages are high cost, possible air emissions of pollutants and marketing problems with fluctuating outputs of energy.

Capital costs for an incinerator facility with heat recovery features, sized to serve the Cathcart Sanitary Landfill service area, would range from 11 to 14 million dollars. Annual operating, maintenance and amortization costs would be approximately 2.5 to 3.5 million dollars.

In addition, a sanitary landfill would be required as a disposal site for residue and as a backup for use when the incinerator suffered mechanical difficulties.

Pyrolysis

Pyrolysis is a process in which waste is subjected to high temperatures and pressures in an oxygen-deficient atmosphere. This results in the organic portion of the waste being converted to chars, oils, and gases which have a commercial value. The process is self-supporting once the proper temperatures and pressures are achieved. The potential for air pollution is minimized since a small volume of air is fed into the process and much of the gas is reclaimed.

The pyrolysis facility would include a receiving area for vehicles, waste storage area, processing equipment, such as shredders, screens, dryers, conveyors, pyrolysis retort and process equipment for reclaiming the ashes, oils, and chars. Waste process waters would require treatment or may be dischargeable into the municipal sewer system; glass and metals can be reclaimed if mechanical separation equipment is installed.

Pyrolysis facilities are currently being constructed or are in the developmental stage at a number of locations in the United States, including Baltimore, Maryland and San Diego, California. However, no facilities have been in operation for long enough to fully evaluate their cost and performance. The minimum amount of time required to get a facility ready for operation would be three to four years.

A waste residue requiring land disposal would be produced. The major advantages of pyrolysis included the reduced weight and volume of waste for land disposal, and the potential opportunity to reclaim materials. The major disadvantages are high cost and lack of demonstrated performance. Estimated costs of pyrolysis are reported to be similar to those of incineration with heat recovery as steam. In addition, a sanitary landfill would be required as a disposal site for residue and as a backup system for disposing of waste in case of operational failures in the pyrolysis facility.

Recycling

The recycling of solid waste is increasingly preferred by both the general public and engineers and planners as the long-range approach to solid waste processing. It is felt that converting waste into a valuable resource would do much to reduce the disposal burden and reduce waste management costs. The term "waste recycling" covers a number of basic concepts and processes.

One concept is returning the various components of waste to manufacturers for reclaiming, such as returning waste paper to paper manufacturers and returning waste glass to glass manufacturers. Another concept is constructing a facility which converts waste into a material or materials having value, such as composting organic waste and obtaining a soil conditioner.

The recycling of general municipal solid waste has posed a number of problems. The various waste components are normally mixed during waste storage and collection, and it becomes difficult to separate each waste component for return to manufacturers. Problems have occurred in finding markets for waste materials when waste recycling has been attempted. Costs have also hurt many recycling operations since in many cases the total cost of waste recycling, including payments received for the recycled materials, have been much greater than the cost of waste disposal without processing. A number of recycling processes are being developed by various manufacturers. These processes are being implemented in a number of communities in the United States by the manufacturer under contract with the local authority responsible for solid waste disposal. Within the near future, the feasibility of these processes should be ascertainable, making it possible to determine their applicability to Snohomish County. This determination should be enhanced by a current study being conducted by the Washington State Department of Ecology in which a technology review of resource recovery systems is being developed to assist county governments. The objectives developed as a part of the Snohomish County comprehensive solid waste planning effort calls for intensive, ongoing efforts to implement resource recovery in the 1977-1979 time frame.

Milling

Milling is a process in which a hammer mill or other grinding equipment is used to reduce the particle size of solid waste. The milled waste can be compacted to a higher density than unmilled solid waste and thus occupies a smaller volume in the landfill. The moisture present in normal waste is uniformly absorbed in the particles after grinding and results in a humus-like material which will not support flies or rats and is mostly odorless. Thus, the milling eliminates many of the noxious properties of the waste and has been utilized as pre-treatment prior to sanitary landfilling to reduce negative impacts and improve operations. Milling also is used prior to long haul transport as a method of decreasing haul costs, or can be used as pre-processing for incinerator, pyrolysis and recycling facilities.

The milling facility would include a receiving area for collection and transport vehicles, storage, conveyers, milling equipment, dust controls, noise controls and equipment for packing the milled waste into trailers for transport to the land disposal site. The minimum time period required to get a milling transfer facility ready for operation would be approximately two years.

The milling process alone costs between one and two dollars per ton of waste processed and would be partially offset by some reduction in landfill operating cost. The milled wastes would require less compaction effort and slightly less daily earth cover than the unprocessed waste. At the Cathcart site, the annual high rainfall would require daily earth cover as in the conventional sanitary landfill operation to limit the generation of leachate. The benefits gained by milling the wastes would, therefore, be minimal in the operation of the proposed sanitary landfill at the Cathcart site.

Baling

Baling is a process in which solid waste is subjected to high pressure compaction resulting in rectangular bales of waste similar in shape to baled hay. The baled refuse has a considerable higher density than normal waste, with the density of the bales exceeding 1,700 lbs./cu. yd.

The major application of baling has been prior to hauling refuse to land disposal sites. The bales can be economically placed on flatbed trucks, resulting in higher haul weights and lower transportation costs. Sanitary landfill operations are also improved as the bales can be stacked with a loader or forklift, reducing disposal costs and improving site appearance. The bales will require about two-thirds of the landfill space needed by conventional sanitary landfill.

The baling process requires large compacting equipment in order to adequately handle most types of solid waste. In smaller operations with smaller compacting equipment, the process is normally preceeded with a milling operation in order to reduce the particle size of the waste so that the smaller baling equipment can acequately handle it. The process requires substantial maintenance in order to function properly. The minimum time required to get a baling transfer station ready for operation would be approximately two years.

A baling facility would cost 1 to 1.5 million dollars to serve the proposed Cathcart Sanitary Landfill. The annual operating, maintenance and amortization cost would be $350,000 to $450,000.

Alternative Land Disposal Concepts at the Site

The major alternatives associated with preparing and operating the Cathcart site as a legal land disposal site for solid wastes include:

- Type of wastes accepted
- Type of vehicles received
- Starting locations of the landfill operation
- Final elevation and contours

Type of Wastes Accepted

A sanitary landfill can be designed and operated to handle a wide variety of solid wastes including:

- Mixed municipal solid wastes (from residential, commercial and industrial trash sources)
- Hazardous wastes (explosives, hospital and other pathogenic wastes, toxic materials, chemicals, radioactive materials, etc.)
- Bulky wastes (tree stumps, demolition waste, large appliances, large furniture, etc.)
- Tires
- Animal carcasses

Only the mixed municipal solid wastes, small animal carcasses and bulky wastes that fit in collection or transfer containers will be disposed of at the Cathcart site under the proposed design and operating procedure.

Type of Vehicles Received

Traditionally, a wide range of vehicle types and sizes bring solid wastes to the land disposal sites. Only the collection vehicles, large trucks from private firms and transfer vehicles will be allowed to bring solid wastes to the Cathcart site under the proposed operating procedure. The rural landfills and rural transfer stations will be open to automobiles, automobiles with trailers and small trucks. This approach will reduce the traffic and eliminate litter along roads in the vicinity of the Cathcart site.

Starting Location of Landfill Operation

The sanitary landfill operation could be started at either the north or south end of the proposed fill area. The north end was selected to reduce the cost of initial site development. Starting at the south end would require a larger initial cost to install pipelines to treatment facilities at the north end for on-site runoff and leachate.

Starting at either end would have approximately equal impact on the surrounding area and the environment.

Final Elevations and Contours

The options on final elevations and contours of the landfill are constrained by fill life, future use, steepness of slopes for drainage and future maintenance and visual impact in relation to surrounding land forms.

A shallow layer (10 to 20 feet thick) of compacted waste with a top surface contour similar to existing contours would provide a very short life, would have the highest ration of construction cost to waste tonnage capacity and would appear as a flat topped mound in the center of the existing ravine.

The final landfill form with the largest waste capacity (longest fill life) would be a high mound with a north-south ridge line and the sides sloping steeply (4 horizontal to 1 vertical) to the eastern and western buffer strips. This type of final elevation and contour would appear as a large mound in the center of the existing ravine and the steepness would limit the types of future use. Also, daily operations on the upper levels would increase the noise levels at nearby residences.

The proposed final elevations and contours will create a large flat area that slopes gently from approximately elevation 320 feet along the eastern ridge towards the diverted creek along the western side of the site. Side slopes will vary from 10 to 25 percent. This will appear as an extension of the eastern ridge and will provide areas suitable for a large number of future uses. Daily landfill operations will always be below the elevation of the eastern ridge.

CHAPTER 6

RELATIONSHIP BETWEEN LOCAL SHORT-TERM ENVIRONMENTAL USES AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Short-term environmental uses of the Cathcart site span the time period of the construction phase through the completion of the sanitary landfill operation phase. During the life of the site, the sanitary landfill will serve the urban and southern rural county residents with a place to dispose of their solid waste in a manner as environmentally safe as is presently available. Negative effects of short-term use will occur to residents who live in the general vicinity of the Cathcart site and include traffic inconvenience, marginal change in air quality and increased noise levels. Present site wildlife will be lost or displaced.

Effects on the long-term productivity of the Cathcart site are related to the permitted land uses designated by present or future zoning. Implementation of the Cathcart Sanitary Landfill would restrict future generations from using the site for many allowable uses under present zoning regulations after site closure, since the fill areas may limit the siting of structures. However, suggested final uses of the Cathcart site are compatible with present vicinity land use patterns.

Implementation of a sanitary landfill at the Cathcart site should result in a net environmental gain for the majority of the county residents. The closure of all other public disposal sites in the county, which are not capable of being operated in as an environmentally suitable manner, will result. The Cathcart sanitary landfill site is compatible with future solid waste systems now being studied. The sanitary landfill activity can be terminated or changed up to the time its full capacity has been realized. This maintains flexibility with any future changes in solid waste management practices in Snohomish County.

CHAPTER 7

IRREVERSIBLE AND IRRETRIEVABLE RESOURCE COMMITMENTS WITH THE PROPOSED ACTION

The proposed sanitary landfill will become a permanent element in land use development. The site will undergo relatively irreversible topography changes. The potential number of final uses of the site will be indefinitely altered due to settlement and gas generation. The existing wildlife habitat and associated wildlife presently at the site will be irretrievably lost. Final site uses will probably be incompatible for original wildlife types, although wildlife compatible with future uses will again be present.

APPENDIX A

COMMENTS RECEIVED DURING REVIEW
OF
DRAFT ENVIRONMENTAL IMPACT STATEMENT

RECEIVED
APR 10 1975
DEPT. OF PUBLIC WORKS

State of
Washington
Department
of Ecology

April 8, 1975

Snohomish County Department
of Public Works
Solid Waste Division
County Administration Building
Everett, Washington 98201

Attn: Rodney G. Hansen

Re: Draft EIS for Cathcart Sanitary Landfill

Dear Mr. Hansen:

Thank you for the opportunity to review this document. The coverage in most areas of the statement appears quite complete and thorough, indicating forethought in the preparation of those areas in your document.

Your impact statement was reviewed by both our Northwest Regional office and Headquarters office personnel. The following comments and suggestions are offered for your consideration:

General

1. The potential surface water contamination and leachate discharge from the site needs further discussion.
2. The resulting truck traffic could require an evaluation of possible solutions to alleviate future congestion.
3. Socio-economic impact was well addressed in the document. It was encouraging to see that both pro and con were addressed in the discussion.

It should be noted that considerable public interest has been generated concerning this proposed project and some of the citizen concerns parallel the department's concern.

Detailed

1. The draft addresses potential contaminated surface water and leachate discharge from the site and considers several possible measures to mitigate these discharges. It should be noted that the feasibility of these measures have not

Exhibit 1

Snohomish County Department
  of Public Works
Attn: Rodney G. Hansen
April 8, 1975
Page 2

Department
of Ecology

yet been demonstrated to the satisfaction of this department. We would have serious reservations about the ability of the site, as proposed, to meet applicable waste discharge limits. Later examination of the completed solid waste disposal site permit application, (including the engineering report and detailed plans and specifications) by our Regional personnel, should help clarify this point.

2. Possibly a determination could be made that a climbing lane is warranted if the proposed site does become a permanent site. Contact would be with the Washington State Department of Highways since this is a state route.

3. The document stated that possible deflated land values and some stigma of nearby residences to the proposed site could exist. But you also addressed the fact that in the future the immediate area could actually benefit from future development of the site area. Some of these questions and impacts are very hard to answer concretely, but it is noteworthy that both sides of the issue are realized and presented for consideration.

4. Page 4 and Figure 1-4 in addition to page 25 were missing.

5. Pages 13 and 14. The Snohomish Health District Solid Waste Regulations have been adopted and are not pending as the report states.

6. Page 59. The figure of 1700 lb/ft^3 cited as the density of baled refuse appears to be a misprint. A value of 1700 lb/yd3 is more likely.

We hope these comments will be of use to you. If you have any questions, please feel free to contact Mr. Dave Thompson of our Environmental Review Section at 753-6891.

Sincerely,

James P. Behlke
Executive Assistant Director

JPB:je

CC: John Glynn
  Citizens List

WASHINGTON
Department of
FISHERIES

DANIEL J. EVANS
GOVERNOR

ROOM 115, GENERAL ADMINISTRATION BUILDING • PHONE 753-6600
OLYMPIA, WASHINGTON 98504

DONALD W. MOOS
DIRECTOR

March 10, 1975

RECEIVED
MAR 13 1975
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Snohomish County Department of Public Works
Solid Waste Division
County Administration Building
Everett, WA 98201

Gentlemen:

As requested, we have reviewed the draft EIS on the proposed Cathcart Sanitary Landfill adjacent to the Woodinville Cutoff Road. Following are our comments:

1. Thomas Creek, which is in the primary impact area (Figure 1.2), has annual runs of coho and chum salmon. As pointed out on page 33, a dam and a box culvert below the site block fish migration on the unnamed creek which empties into the Snohomish River a short distance upstream from the mouth of Thomas Creek. Because young salmon undoubtedly would be present at times in this unnamed stream, we would be concerned over potential impact of leachates upon the fish and their natural food organisms in both this stream and the canal connecting it with Thomas Creek. However, we are favorably impressed by the proposed leachate and runoff treatment facilities and the proposed monitoring of the unnamed creek both above and below the fill area.

2. Relocation of the creek to an open channel near the western boundary of the site will require a Hydraulics Project Approval from the Department of Fisheries and the Department of Game.

3. On page 41, the third line under "Water Pollution" should be amended to read "....pollute the waters to where they are unfit for aquatic life or domestic....purposes." Similarly, the second sentence under "Hazardous Materials" should read "....and chemicals harmful to public health, aquatic life, or the environment...."

4. Appendix B did not list coho and chum salmon or other species of fish in the primary impact area or the four species of salmon (coho, chum, chinook, and pink) which occur in the Snohomish River.

We appreciate the opportunity to comment on this draft EIS.

Sincerely,

Gilbert A. Holland

Gilbert A. Holland
Fisheries Research Coordinator

Final Environmental Impact Statement
Cathcart Sanitary Landfill

Exhibit 2

cc: J. P. Behlke - Dept. of Ecology
E. S. Dziedzic - Dept. of Game

Director / Carl N. Crouse

Assistant Directors / Ralph W. Larson
Ronald N. Andrews

Game Commission

Arthur S. Coffin, Yakima, Chairman
James R. Agen, LaConner
Elmer G. Gerken, Quincy
Claude Bekins, Seattle
Glenn Galbraith, Wellpinit
Frank L. Cassidy, Jr., Vancouver

DEPARTMENT OF GAME

600 North Capitol Way / Olympia, Washington 98504

March 17, 1975

Rod Hansen
Solid Waste Director
Snohomish County Department of Public Works
Everett, Washington

Dear Mr. Hansen:

Your draft environmental impact statement - Cathcart Sanitary Landfill - was reviewed by our staff as requested. Our comments follow.

Your assessment presents an understandable and cohesive picture of proposed sanitary landfill operation and associated environmental impacts. Our primary concerns are project impacts on wildlife and intermittent surface drainages which pass through the site.

We found your impact statement contained an objective appraisal of potential primary and secondary adverse impacts on these resources. The emphasis placed on minimizing measures to protect water quality (e.g. creek diversion, holding ponds, water quality monitoring program for life of project, etc.) is most appropriate (pages 31-33). Careful implementation of these measures is essential. Further discussion of additional action which will be taken in the event these measures prove unsuccessful, in part, would be helpful.

Your acknowledgement that the site's natural vegetation and wildlife will be irretrievably lost is appropriate. However, we are unclear on what measures will be taken to mitigate this loss, if any. A revegetation plan is proposed. Perhaps it would be possible to gear this plan towards reinstitution of natural vegetation and other qualities which would create a habitat environment favorable to wildlife. Discussion of the feasibility of this option in the final statement would be appreciated.

As a final note, we feel the approach you have taken to assessment of wildlife conditions in this impact statement is commendable. Categorization and inventory of site lands by ecologic zones provides the reader with a good understanding of the site; we hope this approach will be considered for future statements.

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MAR 18 1975
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Thank you for the opportunity to review your statement. We hope our comments will be helpful.

Sincerely,

THE DEPARTMENT OF GAME

E. S. Dziedzic

Eugene S. Dziedzic, Asst. Chief
Environmental Management Division

ESD:jb
cc: Chitwood
Agencies

HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS

Highway Administration Building
Olympia, Washington 98504 (206) 753-6000

Daniel J. Evans - Governor
G.H. Andrews - Director

March 14, 1975

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MAR 17 1975
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Snohomish County Department of
Public Works
Solid Waste Division
County Administration Building
Everett, Washington 98201

Snohomish County
Cathcart Sanitary Landfill
Draft Environmental Statement

Gentlemen:

We have completed our review of the draft environmental statement for the above project and offer the following comments:

We agree that a truck climbing lane, scheduled for construction around 1980, may be required sooner due to the increase in truck traffic, should this proposal become operational.

The statement recognizes the existing operational problems on SR 9 and discusses the potential impact of additional truck volumes and the problems and hazards of a commercial truck approach on the 5% grade arterial. We would recommend that alternative approaches to the site be studied and included in the statement.

Should it be determined that access from SR 9 is most desirable, it will be necessary to obtain the proper permits from the State Highway Department for a commercial approach to the site. Inquiries concerning access permits should be made through Mr. W. C. Bogart, District Engineer, 6431 Corson Ave. So., Seattle, Washington 98108.

Thank you for the opportunity to review this information.

Sincerely,

G. H. ANDREWS
Director of Highways

Russell Albert for

By: H. R. GOFF
Assistant Director for
Planning, Research and State Aid

Final Environmental Impact Statement
Cathcart Sanitary Landfill

Exhibit 4

HRG:eh
RA/RBD

cc: W. C. Bogart

Walsh · A. H. Parker · Virginia K. Gunby, Seattle · Howard Sorensen, Ellensburg · Harold L. Boule, Secretary

GOVERNOR
DANIEL J. EVANS
COMMISSIONERS:
JEFF D. DOMASKIN
THOMAS C. GARRETT
KAY GREEN
BEN HAYES
RALPH E. MACKEY
EUSTACE VYNNE
WILFRED R. WOODS
DIRECTOR:
CHARLES H. ODEGAARD

WASHINGTON STATE
PARKS & RECREATION COMMISSION
LOCATION: THURSTON AIRDUSTRIAL CENTER
PHONE 753-5755
P. O. BOX 1128
OLYMPIA, WASHINGTON 98504

March 3, 1975

IN REPLY REFER TO:
RECEIVED
MAR 5 1975
CO. ENG. DEPT.

Mr. Rob Hansen, Solid Waste Director
Snohomish County Department of Public Works
Solid Waste Division
County Administration Building
Everett, Washington 98201

Draft Environmental Impact Statement - Cathcart Sanitary Landfill

Dear Mr. Hansen:

The Washington State Parks and Recreation Commission has reviewed the above-noted document and can find no adverse impact on existing or proposed recreational areas under the jurisdiction of the Commission.

This statement does not give an indication of what type of research was done to determine the location and value of possible archaeological or historical sites. There is no indication that a qualified person was able to survey the proposed project sites. Further, staff finds that this proposed action has no impact on known historical sites (sites either on/ or proposed for the State or National Registers of Historic Places). The registers, however, provide only a small amount of information and should not be construed to be a complete inventory.

In short, it appears that this statement does not adequately identify whether significant archaeological or historical sites are located in the area where the proposed action will occur.

Thank you for the opportunity to review and comment on this statement.

Sincerely,

David Hansen, Chief of
Archaeology and Historic
Preservation

David W. Heiser

David Heiser, Chief
Environmental Coordination

Final Environmental Impact Statement
Cathcart Sanitary Landfill

Exhibit 5

sg

United States Department of the Interior
FISH AND WILDLIFE SERVICE
~~BUREAU OF SPORT FISHERIES AND WILDLIFE~~
River Basin Studies
P.O. Box 1487
Olympia, Washington 98507

Reference: RBS

March 3, 1975

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MAR 4 1975
DEPT. OF PUBLIC WORKS

Mr. Rod Hansen, Director
Solid Waste Division
Snohomish County Dept. of Public Works
County Administration Building
Everett, Washington 98201

Dear Mr. Hansen:

We have reviewed your draft Environmental Impact Statement titled Cathcart Sanitary Landfill. Overall it is a well written document, and reflects an understanding of many biological principles. These comments are the official comments of the U.S. Fish and Wildlife Service as they relate to the State Environmental Policy Act, but not necessarily of the Department of the Interior under NEPA (PL91-190).

Page 18, first paragraph. This paragraph states that "water flows down slope to collect in kettles and potholes". On page 34, the paragraph titled vegetation states that no significant wetlands are found on the site or adjacent to it. We suggest you check with the enclosed copy of Circular 39, published by the Fish and Wildlife Service. The points where water collects may fit one of the wetland categories, particularly types one or two. If so this should be pointed out in the EIS.

Figure 2-6. This is an excellent visual aid, and demonstrates the ecological principle of "edge effect". This figure, in combination with Appendix B demonstrates the variety of wildlife species which can be found in, and benefit from, a heterogeneous environment.

Page 29, Short Range Impact. The source of the roadway base material should be identified, and the possible environmental impacts of obtaining it included in the statement.

Page 33, first paragraph. Are there any possible recreation benefits associated with the proposed pond? What size do you expect it to be? In the same paragraph; how will surface runoff and infiltrating water be "treated"? What is the purpose of the treatment?

Final Environmental Impact Statement
Cathcart Sanitary Landfill

Exhibit 6
(Relative Appendages following)

Page 33, second complete paragraph. How will the leachate be collected? A drawing of the collection system may be appropriate.

Page 33, third complete paragraph and page 34 first paragraph. What steps will be taken if the water quality monitoring program shows that the water is becoming contaminated, particularly after the landfill operation is complete?

Page 36, Table 3-1. Is it possible that the wildlife existing on the site now would consider the landfill operation a nuisance? We suggest the title of this table be changed to reflect the idea that those species are the ones which inhabit the site at the present time.

Page 36, last paragraph. This paragraph is correct as far as it goes. We suggest, however, that while some wildlife may reestablish itself in the area, the species composition will most likely be very different from that which now exists.

Page 63, Chapter 7. We suggest that you also include information relating to the sources for road materials and cell-sealing soils.

Since some of the actions described in the EIS may conflict with the programs and objectives of the U.S. Fish and Wildlife Service, this letter should not be considered as condonance of the project or actions described in the document. Rather, this letter should be regarded as relating only to the adequacy of the EIS as a full disclosure document.

Thank you for the opportunity to review and comment on the draft statement.

Sincerely,

J. Norvell Brown

J. Norvell Brown
Field Supervisor

Enclosure: 1

WETLANDS

# of the UNITED STATES

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
CIRCULAR 39

THE 20 WETLAND TYPES

Reproduced from best available copy.

This chapter describes the 20 wetland types in relation to their usefulness as habitat for waterfowl. Wetlands do not all fit neatly into definite type classifications. In this connection the Wetlands Classification Committee reports:

> Because of the infinitely varied and intergrading physical and chemical conditions that underlie the complex of wetlands in this country, it would be impossible to create a useful classification system that completely avoids overlapping of types recognized. Some degree of overlapping . . . is acknowledged, but it is believed that they are sufficiently distinct to serve satisfactorily in evaluations of wetlands. [9]

In practical use, however, the system has served its intended purpose effectively.

The 20 types of wetlands are grouped under four categories: INLAND FRESH AREAS (Types 1 to 8), INLAND SALINE AREAS (Types 9 to 11), COASTAL FRESH AREAS (Types 12 to 14), and COASTAL SALINE AREAS (Types 15 to 20). In each category, the types are arranged in order of increasing water depths during the growing season. Types 6, 7, and 20, and oftentimes Type 8, are characterized by growths of shrubs or trees. From the standpoint of acreage, Type 1 (Seasonally flooded basins and flats) is the most abundant, and Type 14 (Coastal open fresh water) is the least abundant.

Figure 2 names each type in numerical order and indicates its area and value as waterfowl habitat. In this figure, and in the type maps included in the plates at the end of the report, *Primary Importance* refers to wetland areas rated as high or moderate in value to waterfowl in the State inventories. The total acreage of primary importance in the United States is 22.4 million. Since this figure is derived by totaling values for individual States, it should not be inferred that the percentages used in figure 2 apply uniformly throughout the country. It is generally true, however, that the values of most individual types tend to be rather consistent from one part of the country to another.

Figure 3 shows the United States divided into eight flyway areas. The heavy lines running north and south are administrative boundaries of the four flyways commonly referred to in waterfowl management. The heavy east and west lines roughly divide each flyway into northern and southern halves. The eight resulting areas are convenient units for studying the abundance and importance of wetland types.

Most waterfowl breeding in the United States occurs in the four northern flyway areas, and most of the important wintering grounds are in the four southern ones. Although there is considerable overlapping of these seasonal activities, particularly in States along the line between north and south, wetlands in the four northern areas generally make their most important contribution to breeding waterfowl, and those in the southern areas are used principally for wintering. Wetlands in all eight flyway areas serve as habitat during migration; in some instances their primary value lies in this heavy use by migrant birds.

There follows a brief description of each wetland type, with mention of its more important physical and vegetative characteristics and a table of its acreage by flyway areas. At the end of the report are 20 plates which include for each of the wetland types a map showing its general location, abundance, and waterfowl value, and a photograph of an area representative of the type. The type-distribution maps are not comparable in acres-per-dot representation; they vary from 1 dot for 500 acres in Type 14 to 1 dot for 50,000

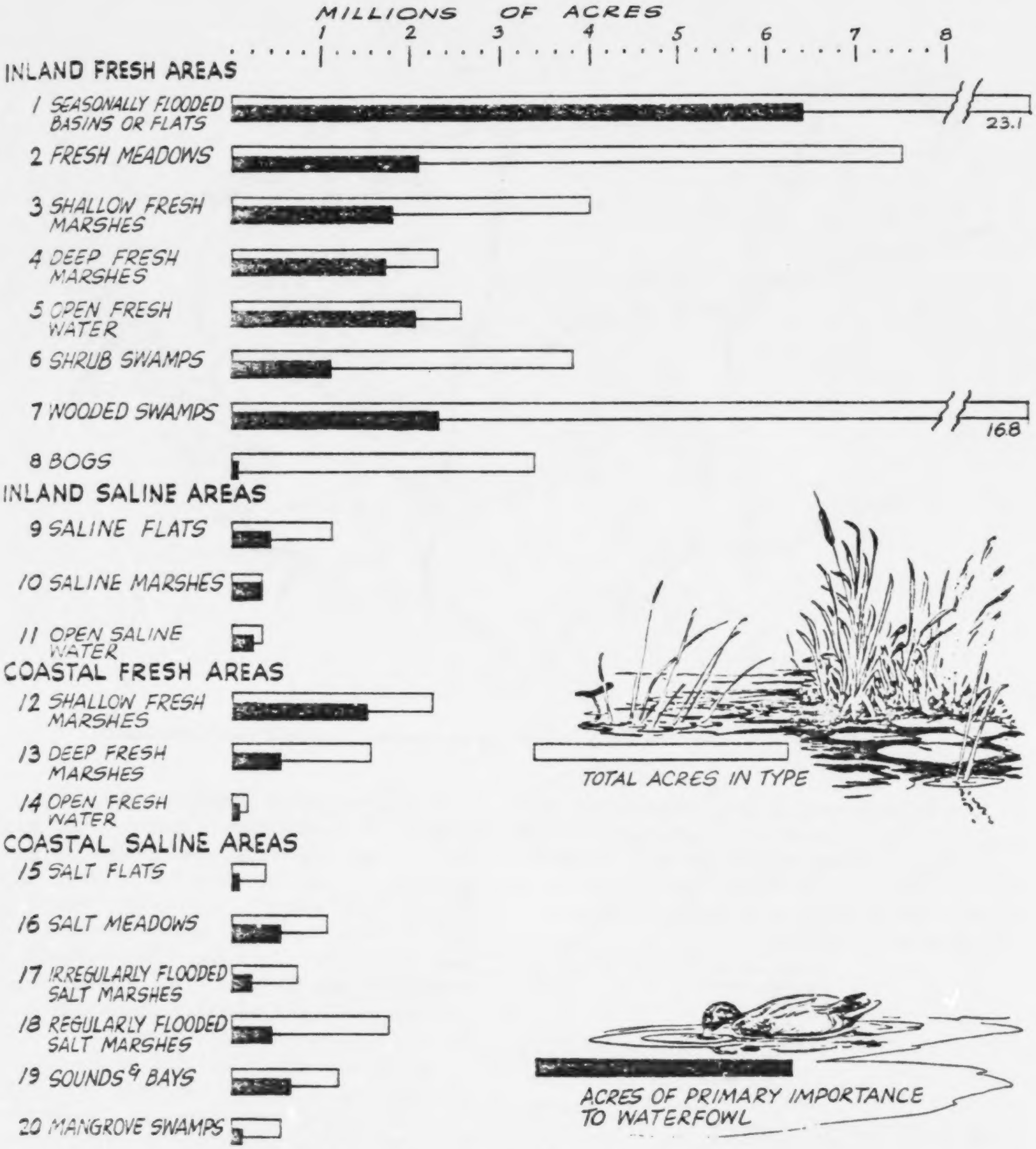


Figure 2.—Extent and present value of wetland types.

acres in Type 1. This variation is necessary because of the tremendous range in acreage totals among the 20 wetland types (see table 5). The dots are based on county acreage data; each dot is located in or close to the county to which it applies. When acreages for two or more counties are combined in order to equal the amount represented by one dot, the dot is close to the geographic center of the counties involved.

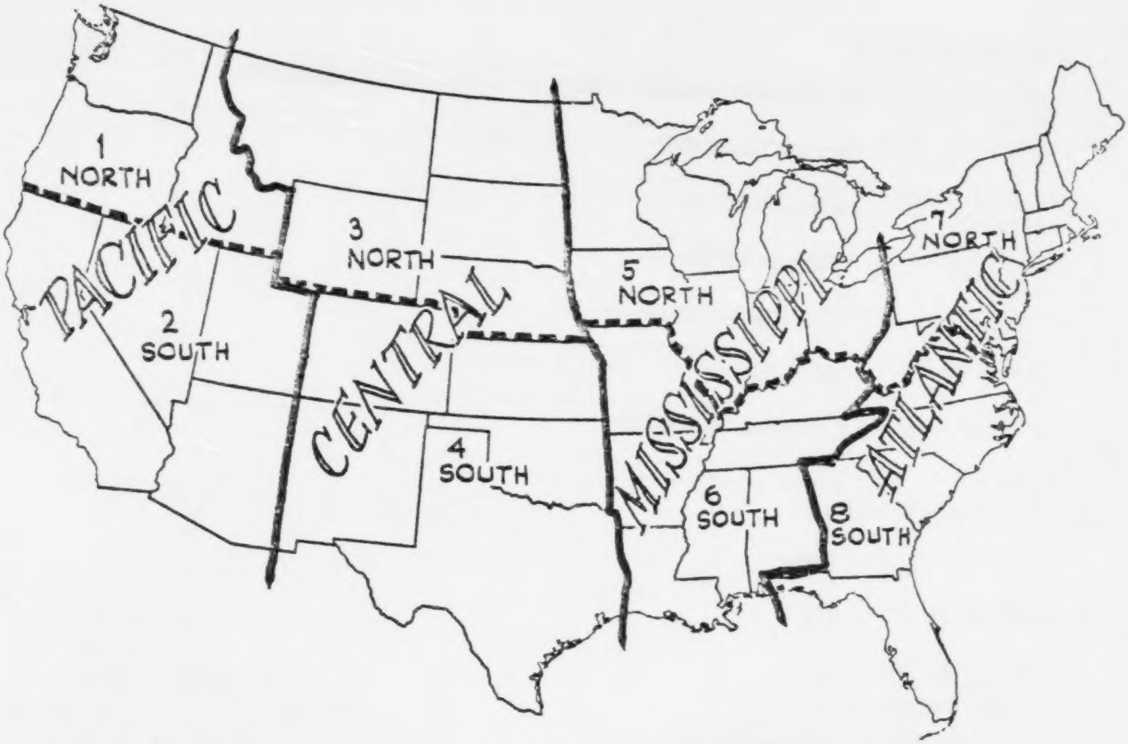
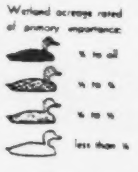


Figure 3.—Flyway areas used in analyzing the relative importance of wetland types to waterfowl.

The symbols used to show relative waterfowl values by flyway areas are standardized for all the type maps. These symbols show what proportion of the habitat of a particular type in a particular flyway area is judged to be of primary importance to waterfowl, as follows:



INLAND FRESH AREAS

Type 1.—Seasonally flooded basins or flats (pl. 1). The soil is covered with water, or is waterlogged, during variable seasonal periods but usually is well drained during much of the growing season. This type is found both in upland depressions and in overflow bottom lands. Along river courses, flooding occurs in late fall, winter, or spring. In the uplands, basins or flats may be filled with water during periods of heavy rain or melting snow.

Vegetation varies greatly according to the season and the duration of flooding. It includes bottom-land hardwoods as well as some herbaceous growths. Where the water has receded early in the growing season, smartweeds, wild millet, fall panicum, tealgrass, chufa, redroot cyperus, and weeds (such as marsh elder, ragweed, and cockleburs) are likely to occur. Shallow basins that are submerged only very temporarily usually develop little or no wetland vegetation.

Upland depressions included in the inventory are confined largely to the three Lake States, the two Dakotas, Montana, and the Panhandle of Texas. In the northern States the presence of this temporary water stimulates high waterfowl production by providing greater area for the establishment of territories by breeding pairs. When water occurs abundantly in the Panhandle, the temporarily flooded basins (playas) are used extensively by migrating and wintering waterfowl.

The overflow bottom lands in the southern part of the Mississippi Flyway provide a major wintering area for ducks as well as good shooting sites for hunters. Particularly in good mast years, feeding ducks use bottom lands when they are flooded. Although there remain more than 10 million acres of overflow lands in Missouri, Kentucky, Tennessee, Arkansas, Mississippi, and Louisiana, most of the wintering waterfowl in this flyway concentrate in certain key areas.

Flyway area:	Acres
1. Pacific north	102, 600
2. Pacific south	143, 400
3. Central north	357, 700
4. Central south	2, 856, 400
5. Mississippi north	1, 134, 000
6. Mississippi south	11, 945, 400
7. Atlantic north	1, 200
8. Atlantic south	6, 551, 400

Type 2—Inland fresh meadows. (pl. 2). The soil usually is without standing water during most of the growing season but is waterlogged within at least a few inches of its surface. Vegetation includes grasses, sedges, rushes, and various broad-leaved plants. In the North, representative plants are carex, rushes, redtop, reedgrasses, mannagrasses, prairie cordgrass, and mints. In Florida, cordgrasses and various species of paspalums and beakrushes are common. Meadows may fill shallow lake basins, sloughs, or farmland sags, or these meadows may border shallow marshes on the landward side. Wild hay oftentimes is cut from such areas.

Fresh meadows are used somewhat in the North by nesting waterfowl, but in most of the country their value is mainly as supplemental feeding areas. If shallow water can be impounded on them, their value can be increased considerably.

Flyway area:	Acres
1. Pacific north	43, 200
2. Pacific south	289, 500
3. Central north	578, 800
4. Central south	40, 700
5. Mississippi north	2, 383, 300
6. Mississippi south	68, 700
7. Atlantic north	30, 700
8. Atlantic south	4, 083, 700

Type 3—Inland shallow fresh marshes (pl. 3.) The soil is usually waterlogged during the growing season; often it is covered with as much as 6 inches or more of water. Vegetation includes grasses, bulrushes, spikerushes, and various other marsh plants such as cattails, arrowheads, pickerelweed, and smartweeds. Common representatives in the North are reed, whitetop, rice cutgrass, carex, and giant burreed. In the Southeast, maidencane, sawgrass, arrowhead, and pickerelweed are characteristic. These marshes may nearly fill shallow lake basins or sloughs, or they may border deep marshes on the landward side. They are also common as seep areas on irrigated lands.

Marshes of this type are used extensively as nesting and feeding habitat in the pothole country of the North Central States and elsewhere. In combination with deep fresh marshes (Type 4), they constitute the principal production areas for waterfowl. Florida and Georgia are the only States where the majority of the shallow fresh marshes are considered to be of lesser importance to waterfowl. Florida alone contains more than 2 million acres of this type.

Flyway area:	Acres
1. Pacific north	33, 700
2. Pacific south	64, 100
3. Central north	817, 600
4. Central south	84, 600
5. Mississippi north	758, 500
6. Mississippi south	15, 300
7. Atlantic north	35, 900
8. Atlantic south	2, 159, 900

Type 4—Inland deep fresh marshes (pl. 4). The soil is covered with 6 inches to 3 feet or more of water during the growing season. Vegetation includes cattails, reeds, bulrushes, spikerushes, and wildrice. In open areas, pondweeds, naiads, coontail, watermilfoils, waterweeds, duckweeds, waterlilies, or spatterdocks may occur. Water-hyacinth and waterprimroses form surface mats in some localities in the Southeast. These deep marshes may almost completely fill shallow lake basins, potholes, limestone sinks, and sloughs, or they may border open water in such depressions.

Deep fresh marshes constitute the best breeding habitat in the country, and they are also important feeding places. In the Western States they are heavily used by migrating birds, especially diving ducks. Florida and Texas are the only States in which the vast majority of these marshes are not rated as being of primary importance to waterfowl.

Flyway area:	Acres
1. Pacific north	92, 500
2. Pacific south	62, 500
3. Central north	686, 500
4. Central south	46, 800
5. Mississippi north	427, 700
6. Mississippi south	21, 500
7. Atlantic north	25, 700
8. Atlantic south	984, 100

Type 5—Inland open fresh water (pl. 5). Shallow ponds and reservoirs are included in this type. Water is usually less than 10 feet deep and is fringed by a border of emergent vegetation. Vegetation (mainly at water depths of less than 6 feet) includes pondweeds, naiads, wildcelery, coontail, watermilfoils, muskgrasses, waterlilies, spatterdocks, and (in the South) water-hyacinth.

In the pothole country of the North Central States, Type 5 areas are used extensively as brood

PUGET SOUND
AIR POLLUTION
CONTROL AGENCY

410 West Harrison Street, Seattle, Washington 98119 (206) 344-7330

February 21, 1975

Rod Hansen, Director
Snohomish County Department
of Public Works
Solid Waste Division
County Administration Building
Everett, Washington 98201

Subject: Cathcart Sanitary Landfill - Draft Environmental Impact Statement

Dear Mr. Hansen:

We have reviewed the Cathcart Sanitary Landfill - Draft Environmental Impact Statement received from you February 7, 1975. We believe that the impact in the area described will be minor. There are, however, two comments that we will make on the air quality section:

1. Burning on a sanitary landfill site is prohibited according to Puget Sound Air Pollution Agency Regulations.
2. It would be helpful to include a diagram or illustration of the disposal system for the gas generated. This would help to answer questions about gas elimination.

We appreciate the chance to comment on this report.

Yours truly,

A. R. Dammkoehler
Air Pollution Control Officer

JRPearson
By: J. R. Pearson
Senior Air Pollution Engineer

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ARD:JRP:et

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213 Hess Building
Tacoma, 98402
(206) 383-5851

SNOHOMISH COUNTY
506 Medical Dental Bldg.
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(206) 259-0288

Exhibit 7

BOARD OF DIRECTORS
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U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

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REPLY TO ATTN OF: 10RAOFA - M/S 623 March 11, 1975

Mr. Rod Hansen, Solid Waste
Director
Snohomish County Department
of Public Works
Solid Waste Division
County Administration Building
Everett, Washington 98201

Dear Mr. Hansen:

We have reviewed the draft environmental impact statement for the Cathcart Sanitary Landfill Snohomish County, Washington.

We find that this is the most complete draft statement concerning a sanitary landfill which we have reviewed. All potential problems entailed in the construction and maintenance of a sanitary landfill are addressed in detail.

It is evident from the statement that much research has gone into preparation of Chapters 3 and 5, Environmental Impact and Alternatives to the Proposed Action. The document fully informs the reviewers of all potential impacts to occur from developing the site as a sanitary landfill.

The following are our comments on specific sections of the draft.

Pages 4 & 5 Proposed Use of the Cathcart Site, Phase 1 - Site Separation. This section sets out plans to minimize potential problems from operation of a sanitary landfill. This is a good section. Much work has gone into planning to control leachate, surface runoff, litter and visual contact.

Page 8 Environmental Control Features
Leachate. Any sanitary landfill in an area receiving an average annual rainfall of 40 inches will have the potential of generating leachate. This potential problem has been addressed in the draft statement and plans for treating the leachate have been made. The quality of the discharge water must be carefully monitored to insure that adequate treatment is being maintained.
Gas. Planned gas controls seem to be adequate.

Exhibit 8

Page 41 Health

Hazardous Materials. Small quantities of these materials will probably enter the site undetected. Possibly a storage area for hazardous materials should be considered for the site. Adequate disposal facilities for hazardous materials are seldom available at the present time yet the materials must be disposed of somewhere.

Page 52 Alternatives to the Project

This is a well prepared and informative section of the report.

Page 55 Alternatives Within the Project

This section also is well prepared and informative.

Page 59 Alternative Land Disposal Concepts at the Site

Types of Wastes Accepted

This section leads the reader to believe hazardous materials and tires will not be accepted at the site. A method of disposing of waste tires should be made available to users of this solid waste management system. Disposal of hazardous materials was addressed earlier in this review.

Noise

The noise increments at residential sites of 7-8 dBA should have little impact if operations of the landfill are strictly confined to daytime and do not conflict with evening and sleep hours. If weekend operations are required, a later starting time (9-10 a.m.) should be considered to avoid conflict with sleeping in.

The noise increase at the Mink Farm (26 dBA) is considered serious, and should require abatement measures and/or negotiations with the owner for noise abatement.

Thank you for the opportunity to review this draft statement.

Sincerely,

Walter D. Jaspers

Walter D. Jaspers
Director
Office of Federal Affairs

SNOHOMISH COUNTY
PLANNING DEPARTMENT

COUNTY ADMINISTRATION BUILDING • EVERETT, WASHINGTON 98201 • (206) 259-9311

March 18, 1975

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Mr. Rod Hansen
Solid Waste Coordinator
Public Works Department
Administration Building
Everett, Washington 98201

Dear Rod:

Thank you for the opportunity to review and respond to the Cathcart Landfill Environmental Impact Statement. The document would appear to fulfill State Environmental Policy Act requirements in a complete and professional manner, and thereby will provide decision-makers with a useful assessment of environmental impacts.

The Snohomish County Planning Department recognizes the many potential impacts attendant in the Cathcart sanitary landfill proposal. The Planning Department also recognizes the limitations and problems associated with current landfill practices in the County. It would appear that many of the adverse implications of solid waste disposal can be better addressed within a controlled environment afforded by a centralized rather than a diffused waste disposal system. Another advantage offered by a central disposal site relates to recycling opportunity; once technological innovation and economics dictate recycling feasibility, recycling opportunities will be facilitated by concentrating rather than dispersing waste materials.

With respect to the specific site selection, the Planning Department has no reason to dispute the selection process which prioritized the Cathcart site above other site alternatives. Extensive cost/benefit analyses were undertaken which identified economic and environmental constraints and ultimately led to the selection of the Cathcart site.

The Draft Impact Statement delineates several potential impacts associated with the Cathcart landfill proposal and proposes several mitigating measures for these impacts. This Department does not possess the professional expertise required to assess the merit of many of the technical mitigating measures. Existing

Exhibit 9

solid waste disposal statutes and jurisdictional agencies with expertise will determine the technical and operational methods appropriate for a solid waste fill on the proposed site. The Planning Department's comments will be limited to those issues which occur within areas of departmental jurisdiction and familiarity.

1) Comprehensive Land Use Plan, Page 24

The Comprehensive Land Use Plan for the area encompassing the proposed site will soon be updated. While no specific documents and policies have yet been formulated, it is the general opinion of staff that current population projections will effect a downward recomputation of planning area densities contemplated by the existing comprehensive plan. The presence or absence of this sanitary landfill is not expected to affect this downward trend.

2) Topographical Impact, Page 29

"The proposed action may, however, indirectly influence or cause development of supportive facilities which could alter topography." Such ancillary projects and probable concomitant impacts should be enumerated.

3) Aesthetic, Page 38

"Access to the southern end of the site is possible...." This potentiality and its ramifications should be more formally addressed.

4) Figure 3-3, Page 48

Please note the contradiction in the access road proposal indicated in the above figure when compared to figures 1-5 and 1-6.

5) Everett Dump, Page 53

Apparently, the Everett Dump is still operational.

6) Page 62

"Landfill would restrict future generations for using the site for all allowable uses..." This statement is not totally accurate. Several potential uses can be applied to the site subsequent to facility closure and reclamation.

General Comments

1) In order to accomplish on-site water diversion, it would appear that a Surface Water Diversion permit would be required from DOE.

2) The Planning Department is supportive of the principle of recycling. Recycling technology should be applied whenever possible. The Department would hope that the potential existence of sufficient solid waste disposal capacity would not deter the County's efforts to implement recycling programs when such programs become technologically and economically feasible. It is recognized, however, that no recycling program is 100% effective and that a landfill site of an unknown capacity will be required for the foreseeable future.

3) The site is of sufficient acreage and is suitably located to facilitate the internalization of most significant on-site impacts. Off-site impacts such as the generation of truck traffic, haulage spills and other impacts associated with material transport, are attendant in all disposal operations. While a centralized site may provide an opportunity for more control than afforded by a system of dispersed landfill sites, impacts associated with increased truck frequency and concentration are implied by the centralized landfill proposal. The Impact Statement should more fully discuss measures which will be used to mitigate hauling-related impacts.

Again, thank you for the opportunity to comment.

Sincerely,

SNOHOMISH COUNTY PLANNING DEPARTMENT

George F. Sherwin

George F. Sherwin, Jr., Director

GFS:lc

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Snohomish Health District
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Health Is The First Wealth

CLARIS HYATT, M.D., M.P.H.
HEALTH OFFICER
DAVID A. STOCKTON, M.P.A.
EXECUTIVE ASSISTANT

March 28, 1975

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Mr. Rod Hansen, Director
Solid Waste Division
Department of Public Works
Snohomish County
County Administration Building
Everett, Washington 98201

Subject: Draft Environmental Impact Statement
Cathcart Sanitary Landfill

Dear Mr. Hansen,

The following are the comments of Snohomish Health District following review by our staff of the Draft Environmental Impact Statement relative to the proposed Cathcart Landfill Site:

1. Page 2: The official title of this agency is incorrectly stated and should be Snohomish Health District.
2. Page 4, Paragraph 3: Specifically what wastes will be classified as "hazardous" and not be accepted at the site is not stated.
3. Page 5, Paragraph 2: The potential impact of recycling leachate on surface water is not addressed.
4. Page 5, Paragraph 4: The matter of disposal of waste water from the truck washing facility is not addressed.
5. Page 9, Paragraph 4: Monitoring of gas, surface waters, and ground water will be done by the Snohomish County Department of Public Works and results should be submitted to Snohomish Health District for review.
6. Page 13, Paragraph 6 (Page 53, Paragraph 1): Snohomish Health District Rules and Regulations Governing Solid Waste Handling were adopted on October 8, 1974 by the Board of Health.

Exhibit 10

7. Page 14, Last Paragraph: The reference to the Fircrest Water District should be corrected to the Silver Lake Water District.

8. Page 16, Paragraph 8 and Figures 2-1: The northern ¼ section and western half of the penultimate ¼ section have not been geologically examined.

9. Page 23, Paragraph 3: The statement does not include reference to recent developments to the west of the site.

10. The Department of Ecology is in the process of adopting noise abatement regulations in regards to both motor vehicle performance standards and maximum environmental noise levels. We recommend you review these proposed regulations and consider the sound levels that may be emitted in relation to the residential homesites in the area.

    A copy of the proposed regulations is enclosed; your attention is directed to "W.A.C. 173-60-040 Maximum Permissible Environmental Noise Levels, (1) No person shall cause and no person in possession of any property shall permit noise to emanate from that property which exceeds the maximum permissible noise levels for the classes of environment in Table 1".

TABLE 1 MAXIMUM PERMISSIBLE ENVIRONMENTAL NOISE LEVELS

NOISE SOURCE	CLASSES OF NOISE RECEIVER		
	CLASS AA & A	CLASS B	CLASS C
Classes AA & A	55	57	60
Class B	57	60	65
Class C	60	65	70

(2) "For all motor vehicles operated on private property, the maximum permissible noise level shall be established in Table 1 plus the deviations as allowed in W.A.C. 173-60-050 (3)". "This includes but is not limited to, all off-road recreational vehicles and motorcycles".

W.A.C. 173-60-050 Deviations from Maximum Permissible Environmental Noise Levels (1) "Between the hours of 9:00 p.m. to 7:00 a.m., the maximum permissible environmental noise levels established in Table 1 of this section shall be reduced by 10 dBA except within Class C receiving environments which shall remain at the level specified in Table 1".

(3) "The maximum permissible noise levels established in Table 1 may be exceeded in all environments by not more than:

(a) 5 dBA for a duration not to exceed 15 minutes per hour; or

(b) 10 dBA for a duration not to exceed 5 minutes per hour; or

(c) 15 dBA for a duration not to exceed 1.5 minutes per hour".

The Department of Ecology expects to have these regulations adopted within the next few months and possibly taking effect by July 1975. It would seem advisable, therefore, at this time to consider the effects these regulations would have relative to the residencies in proximity to the proposal landfill and that appropriate comment be included in the Environmental Impact Statement.

11. Page 36, Paragraph 1: Wording should be changed from Snohomish Health District "utilizes" to Snohomish Health District "recommends

12. Page 39; Noise is considered by many experts to be a definite health problem in addition to an aesthetic problem. Currently, standards are proposed for noise regulations, refer to comment number 9.

13. Page 40, Paragraph 3: There was no mention of safety as a health aspect.

14. Page 41, Paragraph 6: The problem of disposal of those hazardous wastes not accepted at the landfill has not been addressed.

15. Page 50, Paragraph 2: Additional possible unavoidable adverse impacts are the potential for offside litter generation and the impact of heavy machinery operation on onsite surface water quality.

16. Page 52, Paragraph 4: It is suggested that the wording "at least weekly or daily" be changed to "occassionally".

Sincerely,

SNOHOMISH HEALTH DISTRICT

By Claud Hyatt, MD
Health Officer

CH/LM/BR: as

State of Washington
Department of Ecology

Chapter 173-60
Washington Administrative Code (WAC)

Proposed

MAXIMUM ENVIRONMENTAL NOISE LEVELS

DRAFT

DRAFT of November 14, 1974

Department of Ecology
Noise Abatement
Olympia, Washington 98504
(206) 753-6867

PROPOSED
MAXIMUM ENVIRONMENTAL NOISE LEVELS

WAC 173-60-010 AUTHORITY AND PURPOSE. Under Section 3 (1) of the Washington State Noise Control Act of 1974, Chapter 183, Laws of 1974, the Legislature directed the Department of Ecology to "adopt, by rule, maximum noise levels permissible in identified environments in order to protect against adverse effects of noise on the health, safety, and welfare of the people, the value of property, and the quality of the environment." The Department was further instructed to consider economics, the state of technology, and other factors which govern the use of products that emit noise. In addition, rules to achieve compliance with the established noise levels should also be adopted and may include performance and use standards and public information requirements. The purpose of this section is to abate environmental noise by application of the above-stated Legislative mandates.

WAC 173-60-020 DEFINITIONS. (1) Ambient Sound Level - The sound pressure level of the all-encompassing sound associated with a given environment, being usually a composite of sounds from many sources. The A-weighted sound pressure level exceeded 90 percent of the time based on a one-hour period.

(2) A-scale (dBA) - The sound level in decibels measured using the "A" weighting network as specified in American National Standards Institute Specifications (ANSI) S 1.4-1971 for sound level meters.

(3) Decibel (dB) - A unit of measure of sound, based on a logarithmic scale, of the ratio of the magnitude of a particular sound pressure level to a standard reference pressure of 20 micronewtons per square meter ($\mu N/m^2$).

(4) Department - Department of Ecology.

(5) Director - Director of the Department of Ecology.

(6) EDNA - Environmental Designation for Noise Abatement.

(7) Impulsive Character - An attribute of a sound whereby the duration of the peak of the sound level is of short duration (less than one-half second) and short compared to the occurrence rate and peak value exceeds the ambient sound level by more than 10 dBA as measured using the fast response characteristic of a Type 1 or Type 2 sound level meter.

(8) Motor Vehicle - Any vehicle which is, or is designed to be self-propelled or is designed or used for transporting persons or property. This definition excludes airplanes, water craft, and trains.

(9) Local Government - County or city government or any combination of the two.

(10) Noise - Unwanted or undesirable sound or any sound which causes or tends to cause an adverse psychological or physiological effect on human beings.

(11) Noise Abatement Officer - Shall be any city (county) agent designated to administer local noise abatement.

(12) Sound Level - A weighted sound pressure level measured by use of a sound level meter with an "A" weighting network and reported as dBA.

(13) Sound Level Meter - A device which measures sound pressure levels and conforms to Type 1 or Type 2 as specified in ANSI publication S 1.4-1971.

(14) Person - Any individual, partnership, association, governmental body, state, or other entity whatsoever.

(15) Periodic Character - An attribute of a sound whereby the sound level varies with time in a repetitive manner and the peak value is more than 5 dB higher than the minimum value.

(16) Public Roads - Any street, alley, road highway, freeway, or thoroughfare in this State used by the public or dedicated or appropriated to public use.

(17) Pure Tone Component - An attribute of a sound whereby a tone of a single frequency is easily perceivable over the background level.

(18) Racing Event - Any competition using MOTOR VEHICLES conducted under a permit issued by the governmental authority having jurisdiction or, if such permit is not required, then under the auspicies of a recognized sanctioning body.

(19) Race Track - That property used for racing events.

(20) Water Craft - Any contrivance used or capable of being used as a means of transportation or recreation on water.

WAC 173-60-030 IDENTIFICATION OF ENVIRONMENTS.

(1) Basis for EDNA - If local government has approved an Environmental Designation for Noise Abatement (EDNA) that is not inconsistent with this part, such EDNA shall apply. Otherwise EDNA shall be based on the permissible land use as designated by a local zoning ordinance, or where a local zoning ordinance has not been established, on the intended land use if designated by a comprehensive

land use plan. If there is neither a zoning ordinance nor a comprehensive land use plan, then the Director or his designee shall determine the environmental designation for noise abatement. Such determination shall take into consideration the present, future, and historical usage, as well as the usage of adjacent and other lands in the vicinity.

(2) Class AA EDNA - Lands where the qualities of serenity, tranquillity, and quiet are of extraordinary significance and serve an important public need, and where the preservation of such qualities is essential if the land is to continue to serve its intended purpose. Examples of such lands are wilderness zones, particular parks or portions of parks, or open spaces which are dedicated or used for activities requiring special qualities of serenity, tranquillity and quiet, or lands where any statute, local law, or ordinance requires such designation.

(3) Class A EDNA - Lands where human beings reside and sleep. Such land shall include the residence or building, where habitation and sleeping normally take place and any location within 100 feet of the major surfaces of such residence or building or the property boundary, whichever is less. Typically, Class A EDNA will be on the following types of property used for human habitation:

(a) Residential, (e.g. year-round residences, rural residences with acreage, estates, seasonal residences, and individual mobile homes).

(b) Multiple Family Living Accommodations, (e.g. apartments, mobile home parks, camps, cottages, bungalows, boarding and rooming houses, and dormitories).

(c) Recreational and Entertainment, (e.g. camps, parks, camping facilities, and resorts).

(d) Community Service, (e.g. orphanges, benevolent and morale associations, home for aged, hospitals, health and correctional facilities).

(4) Class B EDNA - Lands where human beings are likely to communicate with one another by speech. Normally areas designated to be residential or commercial shall be Class B. Typically, Class B EDNA will be those portions of the types of property listed in Section 3 of this part which are not Class A, and the following types of property:

(a) Commercial Living Accommodations (e.g. hotels, motels, and tourist homes).

(b) Commercial Dining Establishments (e.g. restaurants, diners, luncheonettes, snack bars, drive-ins, ice cream bars, and night clubs.

(c) Motor Vehicle Services (e.g. auto dealers-sales and service, service and gas stations, auto body, tire shops, car wash, and parking garage).

(d) Retail Services (e.g. shopping centers, retail outlets and supermarkets).

(e) Banks and Office Buildings.

(f) Miscellaneous Commerical Services, property not used for human habitation (e.g. funeral homes, dog kennels, veterinary clinics).

(g) Recreation and Entertainment, property not used for human habitation (e.g. theaters, stadiums, racetracks, fairgrounds, amusement parks, game farms, skating rinks, golf courses, riding stables, beaches, and parks).

(h) Community Services, property not used for human habitation (e.g. educational, religious, governmental, cultural, recreational facilities and cemeteries).

(i) Forest lands, preserves, and private hunting and fishing clubs.

(5) Class C EDNA - Lands where human beings are likely to remain for long periods of time while engaged in activities for which communication by speech is only occasionally necessary. Typically, Class C EDNA will be on the following types of property:

(a) Storage, Warehouse and Distribution Facilities, property used for storage (e.g. gasoline storage and/or distribution, grain elevators, lumber yards, coal yards, trucking terminals and piers).

(b) Industrial, property used for the production and fabrication of durable and nondurable man-made goods (e.g. manufacturing, mining, quarrying and wells).

(c) Agricultural, property used for the production of crops or livestock (e.g. livestock and products; field, truck and orchard crops; fruits, nursery and greenhouse stock, and fur products).

(6) Class ( )D EDNA - Lands that include the uses and characteristics of Classes AA, A, B, or C above and in which the ambient sound level is at such a level that, in the opinion of the Noise Abatement Officer, the major activities associated with that land use are interfered with and compliance with the maximum environmental noise levels is not practical at the time of designation or in the near future. This classification shall be temporary and shall be denoted with either AA, A, B, or C as appropriate, followed with the letter D to designate it a noise degraded environment.

Typically, Class ( )D EDNA will be those land uses described in 2 through 5 above and include the following examples:

(a) A residential zone adjacent to a major highway.

(b) An unzoned area with conflicting land uses side by side.

(c) Schools, residences or other noise-sensitive properties in an airport zone.

WAC 173-60-040 MAXIMUM PERMISSIBLE ENVIRONMENTAL NOISE LEVELS. (1) No person shall cause and no person in possession of any property shall permit noise to emanate from that property which exceeds the maximum permissible noise levels for the classes of environment in TABLE 1.

TABLE 1. MAXIMUM PERMISSIBLE ENVIRONMENTAL NOISE LEVELS

NOISE SOURCE	NOISE RECEIVER		
	Classes AA & A (dBA)	Class B (dBA)	Class C (dBA)
Classes AA & A	55	57	60
Class B	57	60	65
Class C	60	65	70

(2) For all motor vehicles operated on private property, the maximum permissible noise level shall be as established in TABLE 1 plus the deviations as allowed in WAC 173-60-050(3). This includes, but is not limited to, all off-road recreational vehicles and motorcycles.

(3) Racing Events - No person shall cause or allow noise levels emitted from racing events at existing racetracks to exceed by more than 10 dBA those noise levels specified in TABLE 1, plus those deviations as allowed in WAC 173-60-050(3).

(4) Watercraft - No person shall operate any watercraft in such a manner as to exceed 80 dBA when measured at any point on land or at a distance of not less than 50 feet from the path of travel.

WAC 173-60-050 DEVIATIONS FROM MAXIMUM PERMISSIBLE ENVIRONMENTAL NOISE LEVELS. (1) Between the hours of 9:00 p.m. and 7:00 a.m., the maximum permissible environmental noise levels established in TABLE 1 of this section shall be reduced by 10 dBA except within a Class C receiving environment which shall remain at the level specified in TABLE 1.

(2) The maximum permissible noise levels established in TABLE 1 shall be reduced by 5 dBA for:

(a) Sound of periodic character, or

(b) Sounds of impulsive character, or

(c) Sounds with a pure tone component.

(3) The maximum permissible noise levels established in TABLE 1 may be exceeded in all environments by no more than:

(a) 5 dBA for a duration not to exceed 15 minutes per hour; or

(b) 10 dBA for a duration not to exceed 5 minutes per hour; or

(c) 15 dBA for a duration not to exceed 1.5 minutes per hour.

(4) The maximum permissible environmental noise levels specified in TABLE 1 may be exceeded by the following types of NONSTATIONARY EQUIPMENT as specified between the hours of 7:00 a.m. and 9:00 p.m. as measured at the boundary of the receiving property or at a distance of 50 feet from the equipment, whichever is greater, by no more than:

(a) 25 dBA for EQUIPMENT OF MORE THAN 20 HORSEPOWER ON CONSTRUCTION SITES, such as crawlers, tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, graders, off-highway trucks, ditchers, trenchers, compactors, compressors, pneumatic powered equipment.

(b) 20 dBA for PORTABLE POWERED EQUIPMENT OF 20 HORSEPOWER OR LESS USED IN TEMPORARY LOCATIONS IN SUPPORT OF CONSTRUCTION OR MAINTENANCE activities, such as chain saws, log chippers, powered hand tools.

(c) 15 dBA for POWERED EQUIPMENT INTENDED FOR REPETITIVE USE IN RESIDENTIAL AREAS, such as lawn mowers, small lawn and garden tools, riding tractors, snow removal equipment, powered hand tools, and composters.

(5) If a particular item of equipment cannot be categorized in 4a, 4b, or 4c above, then the Director shall determine the category and maximum noise level for that category.

WAC 173-60-060 EXEMPTIONS. The provisions of WAC 173-60-040 shall not apply to sounds emanating from the following sources. (1) Sounds created by motor vehicles while traveling on public roads. This exception does not apply to motor vehicles operated on private property.

(2) Sounds that originate from aircraft in flight and sounds that originate at airports which are directly related to aircraft flight operations and aircraft safety (i.e. taxiing, landing, takeoff, and flight). This exception does not apply to aircraft maintenance, engine testing, or any other activity conducted at the airport that is not directly related to flight operations.

(3) Sounds created by railroad trains provided that the total idling time at any one location does not exceed 30 minutes.

(4) Sounds created by bells, chimes or carillons.

(5) Sounds created by blasting.

(6) Sounds created by safety and protective devices where noise suppression is not feasible.

(7) Sounds created by the discharge of a rifle, shotgun, pistol or other firearm, provided that sounds created by such devices when under test by manufacturer are not exempted.

(8) Sounds created by emergency equipment necessary in the interests of law enforcement and public safety.

(9) Sounds from warning devices not operating continuously for more than five minutes.

(10) Sounds not electronically amplified emitted from sporting events, authorized parades, and other public events except as controlled by other noise provisions.

(11) Sounds created by equipment covered by the provisions of WAC 173-60-050.

WAC 173-60-070 IMPLEMENTATION SCHEDULES. (1) Conditions of Issuance - The department may approve and issue to any person an implementation schedule for meeting any particular requirement of this chapter, if it finds that immediate compliance with such requirement cannot be achieved because of conditions beyond the control of such person or because of special circumstances rendering immediate compliance unreasonable in light of economic or physical factors or because of the nonavailability of feasible technology or control methods.

(2) Requesting Procedure - Implementation schedules shall be issued only upon application in writing to the department. Such application shall state in a concise manner the facts to show cause why such schedule should be approved. If an application is disapproved by the department, the requester may appeal the decision to the Pollution Control Hearings Board, pursuant to chapter 43.21B RCW.

(3) New Noise Sources - Sources of noise, subject to this chapter, which are constructed and placed into operation after the effective date hereof shall immediately comply with the requirements of this chapter, except in extraordinary circumstances where overriding considerations of public interest dictate the issuance of an implementation schedule.

WAC 173-60-080 COMPLIANCE. Upon written notification from the Director, the owner or controller of an industrial, commercial, or residential noise source operating in violation of the adopted regulations shall submit a compliance schedule acceptable to the department. The schedule shall set forth the dates, terms, and conditions by which the person responsible for the noise source shall comply with the adopted regulations.

WAC 173-60-090 MONITORING AND REPORTING. Upon written notification from the department, persons owning or controlling an industrial or commercial noise source shall monitor and record the maximum noise levels and operating times of equipment, facilities, operations, and activities, and shall submit such data to the department in accordance with the form and schedule requested by the department. Such measurements shall conform to the noise measurement procedures adopted by the department.

WAC 173-60-100 DIFFERENT LIMITATIONS IN LOCAL ORDINANCES. No ordinance or resolution of any city, town or county which imposes noise abatement and control requirements differing from those adopted by the department shall be effective unless and until approved by the Director. If approval is denied, the department, within 60 days of submission of such local ordinance or resolution to the department, shall deliver its statement or order of denial, designating in detail the specific provision(s) found to be objectionable and the precise grounds upon which the denial is based, and shall submit to the local government, the department's suggested modification.

The local government, at any time thereafter, may prepare modifications designed to eliminate the inconsistencies and resubmit the regulation to the department for approval, or may appeal for hearing before the Pollution Control Hearings Board under the procedures of Washington Administrative Code (WAC) Chapter 371-08.

WAC 173-60-110 EFFECTIVE DATE. This chapter shall become effective on July 1, 1975.

ECONOMIC DEVELOPMENT COUNCIL
P.O. BOX 24 • EVERETT, WASHINGTON • 206-258-2626

March 17, 1975

Mr. Rod Hansen
Snohomish County Department of Public Works
Solid Waste Division
County Administration Building
Everett, Washington 98201

Dear Mr. Hansen:

The Economic Development Council would like to go on record as supporting the Cathcart Sanitary Landfill. The Cathcart site meets an urgent need for a well planned sanitary landfill in Snohomish County. The Environmental Impact Statement outlines adequate provisions to minimize any adverse impact to the Community.

Sincerely,

Kenneth W. Newerf
Managing Director

KWN/mp

Final Environmental Impact Statement
Cathcart Sanitary Landfill

Exhibit 11

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MEMO TO: Mr. Rod Hansen, Solid Waste Director, Snohomish County Department of Public Works, Everett

FROM: Ernst L. Gayden, Associate Professor of Environmental Planning and Human Ecology, Huxley College, Bellingham

DATE: 13 March 1975

SUBJECT: Comments on the Draft Environmental Impact Statement of the Cathcart Sanitary Landfill

I. Significant Data Omissions

p. 4: "The intermittent creek, which flows through the center of the site, will be diverted to an open channel . . ." Absolutely no data on the flow on this creek is given. I am told by nearby residents that this creek flows year round, most years.

p. 5: "A soils sealant will be used on the bottom and sides of the excavated area . . ." The "soils sealant" is not identified as to type, composition, effective life, nor ability to withstand compression or bacterial action; nor is there any indication of the successful utilization of such a method elsewhere--anywhere.

p. 5: "Leachate treatment facilities will include two lagoons . . .", but the capacity of these lagoons is not given, no estimate of the quantity of leachate or run-off to be expected is given, and no indication that this method of pollution control is proven, tested or workable under these particular site and climatic conditions.

p. 6: Table 1-1: "Daily Solid Waste Loads" shows average tons per day but does not correlate those figures with the number of truck loads per day, nor does the associated text give the basis for these estimates, as allocations of some total waste load.

p. 7: "Gas barriers will be provided . . ." What are "gas barriers"? What is the material? Again, is this a proven technique?

p. 8: "The relatively impervious sandstone along the bottom of the fill and relatively impervious soils around the sides of the fill will act as barriers to prevent migration of leachate . . .", and

p. 17: "The site is underlain at various depths . . . by a soft to moderately hard, grey, silty sandstone reported to be of the Oligocene Age . . ." Then further on p. 17: "Test drilling and on-site water level observations indicate that the sandstone is only slightly permeable. The glacial till is a nearby impervious mixture of gravel, silt and sand which has been thoroughly compacted and consolidated."

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These three statements represent virtually the sum-total of the geological information contained in the statement. They give a clear impression of complete uniformity in the soils and underlying geology. Yet, no area covered in this proposal is of more critical concern,

Exhibit 12

than the possibility of ground water contamination from this site for the next twenty to forty years. The paucity of information and understanding on this subject casts severe doubt on the adequacy of this EIS.

Prof. Dale Cole, soil scientist at the University of Washington, wrote, with reference to this same soil series, underlain by the same type of geological formation at the proposed Coal Creek site:

> "In examining the permeability of the bedrock of the site it is important to consider not only each layer itself, but also the fracturing and faulting that has occurred between and within these layers. It is because of this type of disturbed geology that the ground water systems in the area are difficult to predict and a ground water table as such does not exist. However, water certainly does flow through these structures as evidenced by the numerous wells in this area which are drawing water from similar types of structures." (Letter to Mr. Bruce Laing, 2-16-71)

Yet, on p. 18 we find the statement that "This precipitation is incapable of penetrating into the till and sandstone in appreciable quantities." Further, on the same page: "Wells in the immediate vicinity of the Cathcart site obtain water from perched sources atop the glacial till." But on p. 28: "Although ground water resources are limited, many residences are served by deep private wells." There is no evidence, in the form of well-logs or even a map showing the locations of such wells, to support either statement. The implicit contradiction lies unresolved.

p. 17: The Section on "Hydrology and Drainage" again mentions the "northward flowing creeks," but gives no information as to the rate of flow, how far above the site the creeks rise (begin), and every one of the maps, Figs. 1-2, 1-6, and 2-1, which indicate the creeks' existence, show the creek beginning at the property line. By personal inspection, I know that the principal creek rises south of 152nd Street S.E.

It seems a peculiarly significant omission, that, given a drainage area of 380 acres (Fig. 2-5), the known precipitation, and the stated impermeability of the soils and bedrock, that the quantity of surface drainage is not even estimated.

Fig. 3-3: "Predicted Noise Isopleths" indicates only on-site sources, whereas, it might be anticipated that the most significant sources would be the forty transfer trucks per day, as they climb the grade on SR-9 from the north, or as they gear down from the turn into the site as they come down-grade from the south. Neither Fig. 3-3 nor Fig. 2-10 shows any consideration of noise impacts on the east side of SR-9 in the vicinity of the site.

p. 30: "Geological and Soils," Environmental Impact: There is no inventory reported of the surface glacial deposits and unconsolidated surface materials that will be used as the surface sealants in the proposed cell-fills. Nor is there any estimate of the total cubage required to carry out the entire operation. It would seem, therefore, to be unknown as to whether there is, indeed, sufficient material on site for this proposal.

p. 37: "It must be concluded that residents and properties adjacent to the landfill site may endure certain certain hardships."

No remedial measures are proposed for this probability.

p. 47: Under "Noise," in the middle of the first of two paragraphs on the computer model results, is the statement," Recent site lay-out changes have placed the access road on the western site boundary, rather than the eastern site boundary, as shown in the noise study."!

This is most unusual and certainly requires some greater explanation, as such changes appear nowhere else.

p. 53: In consideration of "Alternative Locations for the Sanitary Landfill within Snohomish County," there is no mention of the use of the Minimum Criteria for Sanitary Landfill Site approval, nor any ranking of the sites by the State's classes.

Furthermore, there seems to have been no consideration, in the alternatives, of a longer haul to a more environmentally suitable site since the engineering requirements of this site have been determined. It seems apparent that the Cathcart site would be quite expensive to both prepare and maintain and monitor.

II. Other Ambiguous, Misleading or Inaccurate Statements

p. 5: "Therefore, the proposed action, at this time, reserves potential developments for the southern portion of the site for later approval." (My emphasis) There is an implication here of some kind of staged approval, but by whom? Were this site approved for use as a landfill site, will not the approval be complete and final?

Fig. 1-5: Gives the first impression of the site as level, and does not indicate the existence of the creeks.

p. 22: Paragraph 4 states: "At present no commercial or industrial activity is located near the site." But in paragraph 5: "A mink farm located at the south boundary of the site is an example of the small scale farming operations . . ." A mink farm is a commercial activity; it is also known that mink are very sensitive to certain types of motor noise, but no mention is made of this possible impact.

p. 24: "The plan designates the ultimate use of the project site and the general area surrounding it for low density residential development . . ." and

p. 51: "However, at such time as the present property owner desires, and at his discretion, the property could be developed."

Both of the statements conceal the essential facts of the true ownership situation regarding the site, which is alleged to be that the site is under the control of the Department of Natural Resources, that one of the owners is the local school district, and that the site has been made available by reason of having been recently logged and therefore having little commercial value to the DNR for the next thirty to sixty years. These allegations, if true, could be seen to be highly prejudicial toward the selection of this, over a more physically suitable site which might have to be purchased.

p. 24: " . . . The Puget Sound Governmental Conference's Interim Regional Development Plan (IRDP) has significant influence upon the project site and its environs."

This statement is false. The IRDP has no influence because it is, itself, only a composite of all local plans in the region, and hence has no mandate. Nor has the PSGC any mandate to implement any regional land-use plan.

In summary, I find the Draft Environmental Impact Statement for the Cathcart Sanitary Landfill to be factually inadequate in detail, seriously misleading in many minor aspects, and supporting, or attempting to support, what appears to me to be a biased choice of a questionable site.

WASHINGTON ARCHAEOLOGICAL RESEARCH CENTER
WASHINGTON STATE UNIVERSITY, PULLMAN, WASHINGTON 99163

DIRECTOR
RICHARD D. DAUGHERTY, PH.D.

ASSISTANT DIRECTOR
HARVEY S. RICE

PHONE 509-335-6681
SCAN 426-6681

May 20, 1975

Byron D. Robertson, R.S.
Environmental Specialist
Department of Public Works
Solid Waste Division
County Administration Building
Everett, WA 98201

Dear Mr. Robertson:

An associate of ours, Mr. John Mattson, surveyed the sanitary landfill site in question for archaeological resources when the project was first brought to our attention. This was, perhaps, two years ago. Mr. Mattson made no discoveries of archaeological resources and made no recommendations for further work. As far as the Washington Archaeological Research Center is concerned, this project is clear of archaeological resources.

Thank you for your concern.

Sincerely,

Harvey S. Rice

Harvey S. Rice
Assistant Director

HSR:glr

Final Environmental Impact Statement
Cathcart Sanitary Landfill

Exhibit 13

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MAY 23 1975
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HARSTAD ASSOCIATES INC.
ENGINEERS PLANNERS

April 17, 1975 IN REPLY REFER TO: 629-24

Snohomish County Department of Public Works
Solid Waste Division
County Administration Building
Everett, Washington 98201

Attention: Mr. Rod Hanson

Re: Cathcart Sanitary Land Fill

Gentlemen:

The Cross Valley Water Association has instructed us to notify your department that the draft Environmental Impact Statement for the referenced project did not address the effect the addition of the passing lane on Highway 9 will have on the Cross Valley water system. The Association's present 6 inch water line is located approximately 30 feet west of Highway 9's centerline and extends from the Lowell Road southerly to Interurban Boulevard. Past experience with the State in these matters leaves little doubt that widening of the west side of Highway 9 for a vehicle-climbing lane will dictate that the water line be relocated further west. A preliminary cost estimate for this relocation is $45,000.

The Association is a non-profit water serving agency that will be very adversely affected, should these costs be forced upon them. Please advise us if the cost of this relocation can be included in the land fill development cost to relieve the Cross Valley Water users of this potential financial burden. We will be happy to provide you with detailed plans of our present system or additional information, should you need it.

Very truly yours,

HARSTAD ASSOCIATES, INC.

Jon R. Stack

Jon R. Stack, P. E.
Engineers for Cross Valley Water Association

JRS:clt
cc: Cross Valley Water Association
Snohomish County Engineer

RECEIVED
APR 18 1975
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Final Environmental Impact Statement
Cathcart Sanitary Landfill
(Comments Received Too Late for Inclusion in Text)

P. O. BOX 9760 1319 DEXTER AVENUE N. SEATTLE, WASHINGTON 98109 (206) 285-1912 CABLE: HARSTAD SEATTLE
SEATTLE WASHINGTON FAIRFIELD CALIFORNIA HUNTSVILLE TEXAS LIMA PERU

APPENDIX B

INVENTORY OF LIFE ZONE SUBCATEGORY VERTEBRATES

Following are species lists of organisms common to the life zone subcategories determined to exist at the Cathcart site. Whether the species listed actually are common is not known; what common means is not defined numerically. For example, how common the Bald Eagle is in life zone subcategory 14 is not necessarily how common it is in life zone subcategory 14 of the Cathcart site. Even though it is highly unlikely that Bald Eagles are present anywhere near the Cathcart site, Bald Eagles are still listed as vertebrates common to life zone subcategory 14 which is found on the site.

Species abundance and diversity indices were not determined at the Cathcart site; these operations give numerical data for ecosystem assessment and definition.

It is apparent that the remaining coniferous forest area in the predominantly deciduous forest-meadowed area at the Cathcart site is to be converted to meadowland as well.

Cathcart Site – Life Zone Subcategories

Symbol	Subcategories	Description
12	Mid-Successional	Shrub state. Deciduous brush invades herbaceous cover at fourth or fifth year. It remains until overtopped by tree saplings, usually Douglas Fir.
12A	Mid-Successional	Late shrub early tree stage. Period when saplings are topping brush. Disturbance of the site is still evident and canopy closure is incomplete, 10 to 20 years after disturbance.

Vertebrates Common To Life Zone Subcategory

Amphibia

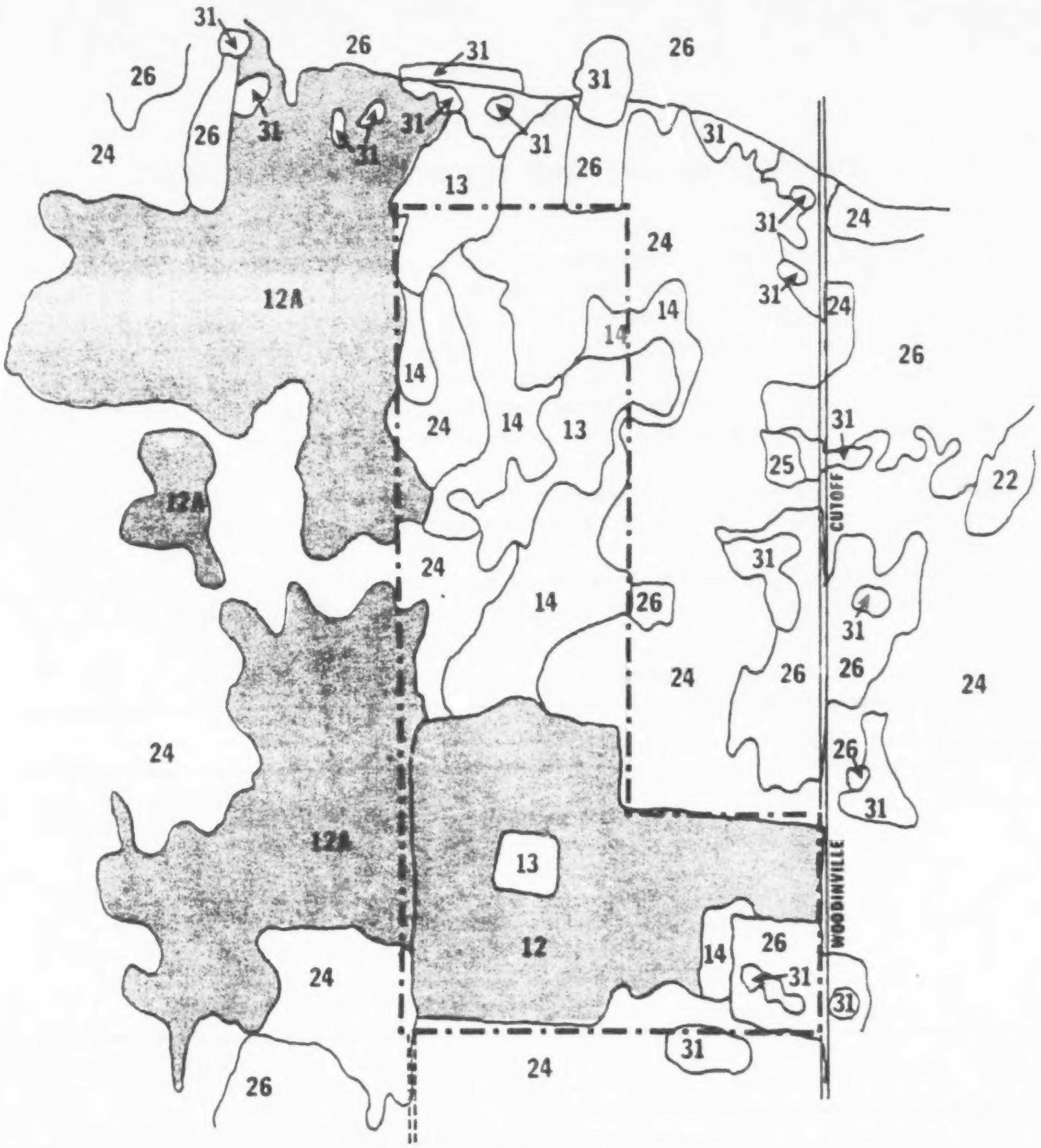
Northwestern Salamander
Western Toad
Long-Toed Salamander
Pacific Tree Frog
Western Red-Backed Salamander
Red-Legged Frog

Reptilia

Northern Alligator Lizard
Common Garter Snake
Rubber Snake
Northwestern Garter Snake

Aves

Violet-green Swallow
Tree Swallow
Barn Swallow
California Quail
Ring-Necked Pheasant
House Wren
Cedar Waxwing
Starling
Robin



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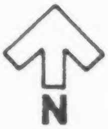
LIFE ZONE SUB-CATEGORIES

12 MID SUCCESSIONAL
12A MID SUCCESSIONAL - A
29% IMPACTED BY SITE



ECOLOGICAL ZONES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE B-1

Vertebrates Common To Life Zone Subcategory (Cont.)

Cliff Swallow
Rufous Hummingbird
Flicker, Red Shafted
Common Nighthawk
Orange-crowned Warbler
Nashville Warbler
Yellow Warbler
Myrtle Warbler
MacGillivray's Warbler
Wilson's Warbler
House Sparrow
Rock Dove
Bewick's Wren
Common Crow
Black-capped Chickadee
Bushtit
Red-winged Blackbird
Bullock's Oriole
Brewer's Blackbird
Brown-headed Cowbird
Evening Crosbeak
Purple Finch
House Finch
Pine Siskin
Varied Thrush
Hermit Thrush
Golden-crowned Kinglet
Roby-crowned Kinglet
American Goldfinch
Rufous-sided Townee
Lincoln's Sparrow
Song Sparrow
White-Crowned Sparrow
Golden-crowned Sparrow
Golden-crowned Sparrow
Oregon Junco

Mammalia

Vagrant Shrew
Oregon Vole
Pacific Jumping Mouse
Eastern Cottontail
Mountain Beaver
Black-tailed Deer
Deer Mouse
Norway Rat
Coyote

Cathcart Site – Life Zone Subcategories

Symbol	Subcategories	Description
13	Subclimax Conifer	Douglas Fir is the tree species

Vertebrates Common To Life Zone Subcategory

Amphibia

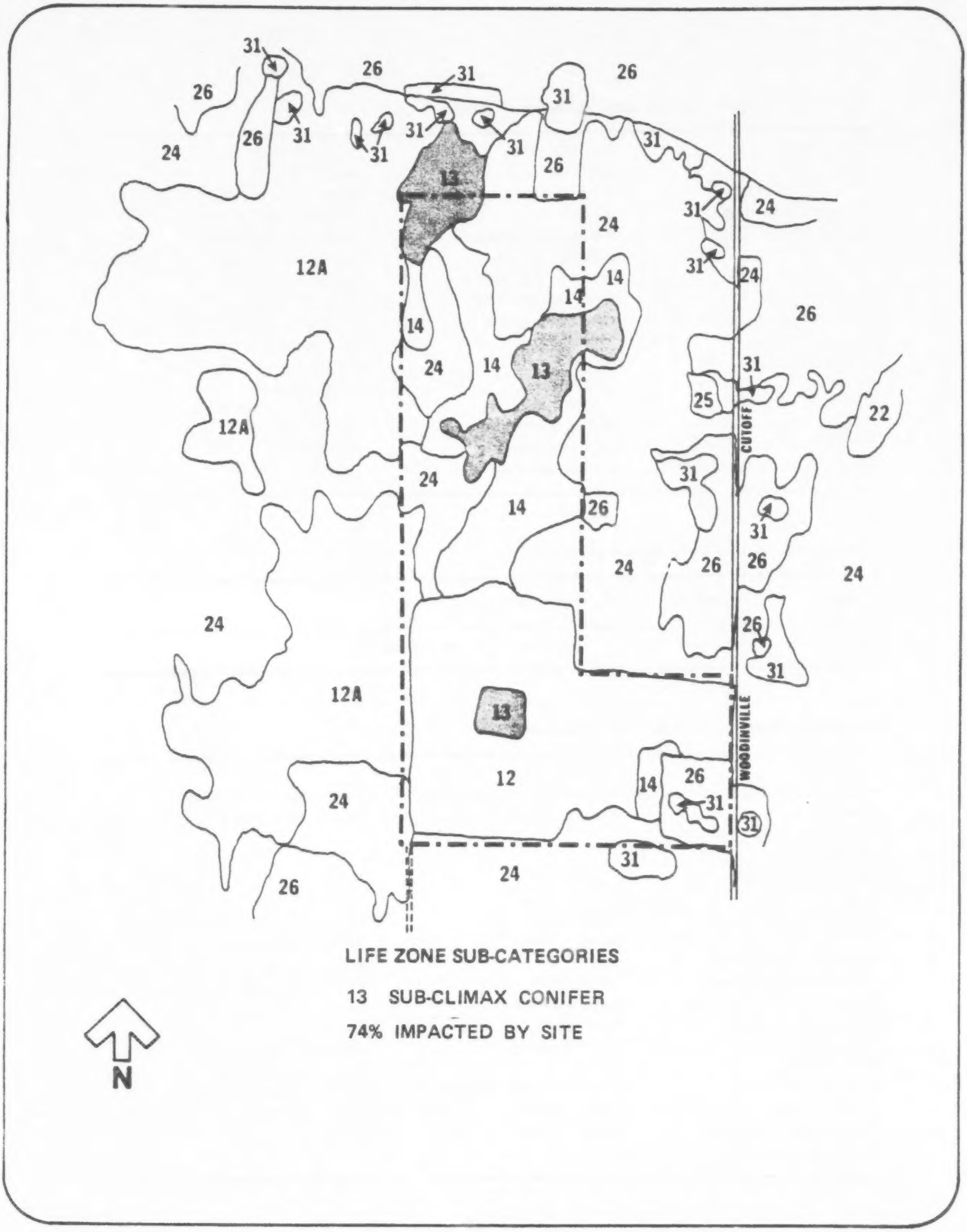
Rough-skinned Newt
Tailed Frog
Red-legged Frog
W. Red-Backed Salamander
Western Toad
Eschsocholt's Salamander
Pacific Tree Frog

Reptilia

None Common Noted

Aves

California Quail
Rock Dove
Common Nighthawk
Rufous Hummingbird
Flicker
Violet-green Swallow
Tree Swallow
Barn Swallow
Cliff Swallow
Common Crow
Black-capped Chickadee
Red-winged Blackbird
House Wren
Bewick's Wren
Robin
Varied Thrush
Hermit Thrush
Ruby-crowned Kinglet
Cedar Waxwing
Starling
Orange-crowned Warbler
Yellow Warbler
House Sparrow
Bullick's Oriole
Brewer's Blackbird
Brown-headed Cowbird
Evening Grosbeak
Purple Finch
Pine Siskin
American Goldfinch
Rufous-sided Towhee
White-crowned Sparrow
Song Sparrow
Bushtit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LIFE ZONE SUB-CATEGORIES
13 SUB-CLIMAX CONIFER
74% IMPACTED BY SITE
N

ECOLOGICAL ZONES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE B-2

Vertebrates Common To Life Zone Subcategory (Cont.)

Mammalia

Throwbridge's Shrew
Mountain Beaver
Deer Mouse
Coast Mole
Townsend's Chipmunk
Long-Tailed Weasel
Shrew Mole
Douglas' Squirrel

Cathcart Site – Life Zone Subcategories

Symbol	Subcategories	Description
14	Sub Climax	After some field work in the planning area, many areas were determined to be in this mixed state, especially in the lowland areas adjacent to urbanized areas. In these areas conifer plantings have not been extensive and there are many stands of mixed Douglas Fir, Hemlock, Broadleaf Maple, Alder, and Western Red Cedar. These are natural successional growth areas that have not reached the climax stage yet.

Vertebrates Common To Life Zone Subcategory

Amphibia

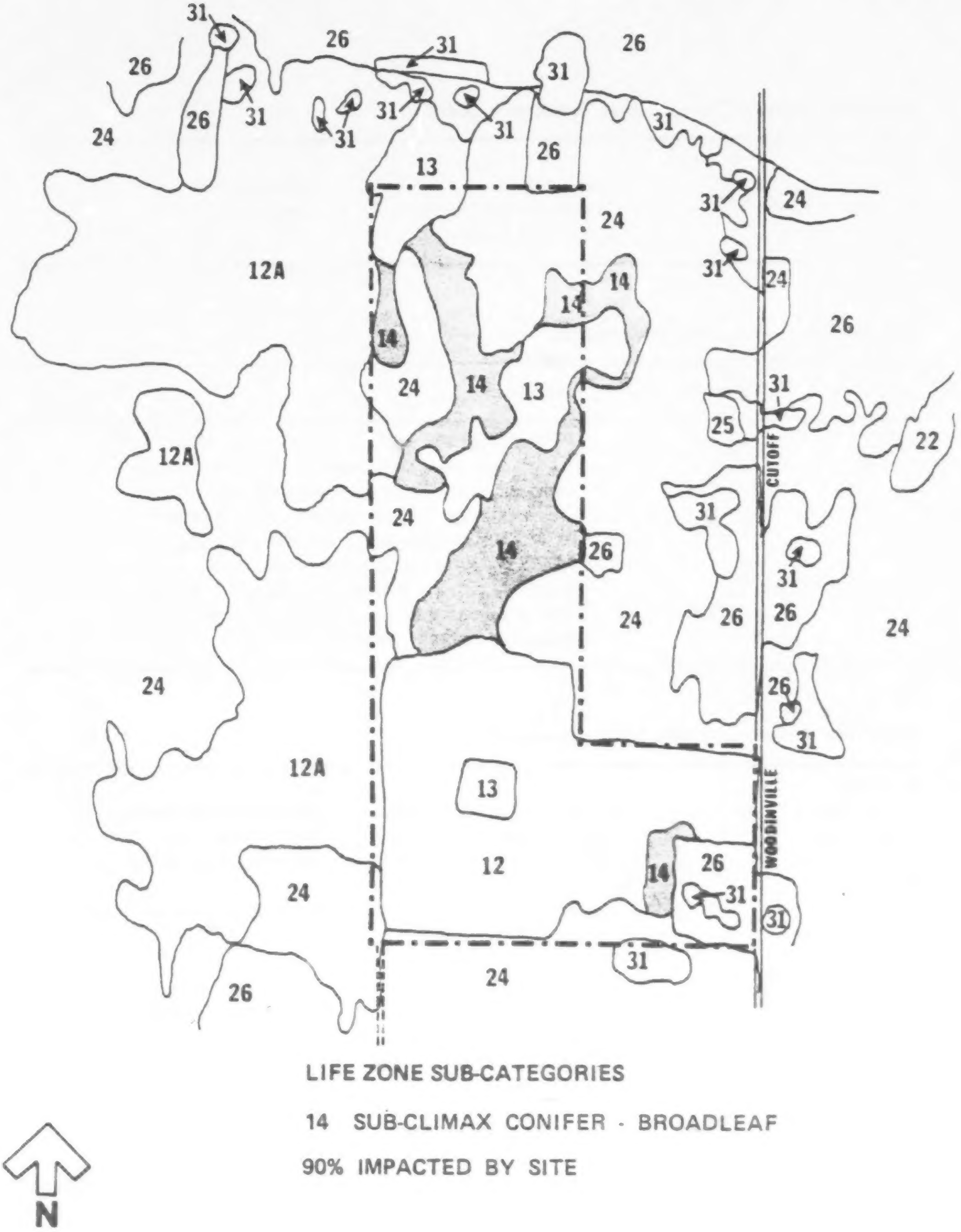
Rough-skinned Newt
Tailed Frog
Red-legged Frog
W. Red-Backed Salamander
Western Toad
Northwestern Salamander
Eschscholt's Salamander
Pacific Tree Frog
Long-toed Salamander

Reptilia

Northern Alligator Lizard
Western Garter Snake
Rubber Snake
Common Garter Snake
Northwestern Garter Snake

Aves

Cooper's Hawk
Red-tailed Hawk
Bald Eagle
Blue Grouse
Ruffed Grouse
Band-tailed Pigeon
Screech Owl
Great-horned Owl
Saw-whet Owl
Vaux's Swift
House Wren
Winter Wren
Bewick's Wren
Orange-crowned Warbler
Yellow Warbler
Rufous Hummingbird
Flicker-red Shafted
Yellow-bellied Sapsucker
Hairy Woodpecker
Downy Woodpecker
Hammond's Flycatcher
Western Wood Pewee
Olive-sided Flycatcher
Violet-green Swallow
Tree Swallow
Audubon's Warbler
Evening Grosbeak
Rufous-sided Towee
Pine Siskin
American Goldfinch
Red Crossbill
Rough-winged Swallow
Gray Jay
Stellar's Jay
Raven
Common Crow
Black-capped Chickadee
Chestnut-backed Chickadee
Bushtit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LIFE ZONE SUB-CATEGORIES

14 SUB-CLIMAX CONIFER - BROADLEAF

90% IMPACTED BY SITE

ECOLOGICAL ZONES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE B-3

Vertebrates Common To Life Zone Subcategory (Cont.)

Robin
Varied Thrush
Hermit Thrush
Swainson's Thrush
Golden-crowned Kinglet
Ruby-crowned Kinglet
Solitary Vireo
Red-eyed Vireo
Warbling Vireo
Black-throated Gray Warbler
Townshend's Warbler
McGillivray's Warbler
Wilson's Warbler
Bullock's Oriole
Brown-headed Cowbird
Western Tanager
Black-headed Grosbeak
Red-breasted Nuthatch
Brown Creeper
Oregon Junco
Chipping Sparrow
White-crowned Sparrow
Golden-crowned Sparrow
Fox Sparrow
Song Sparrow

Mammalia

Trowbridge's Shrew
Mountain Beaver
Deer Mouse
Oregon Vole
Spotted Skunk
Coyote
Coast Mole
Townsend's Chipmunk
Vagrant Shrew
Long-tailed Weasel
Porcupine
Red Fox
Shrew Mole
Douglas' Squirrel
Pacific Jumping Mouse
Striped Skunk
Black-tailed deer
Racoon

Cathcart Site Life Zone Subcategories

Symbol	Subcategories	Description
24	Deciduous Stands	Talus slopes with dominant Broadleaf Maple and Vine Maple, Acer Circinatum Quercus, Oak, Alder Groves: sub climax varian

Vertebrates Common To Life Zone Subcategory

Amphibia

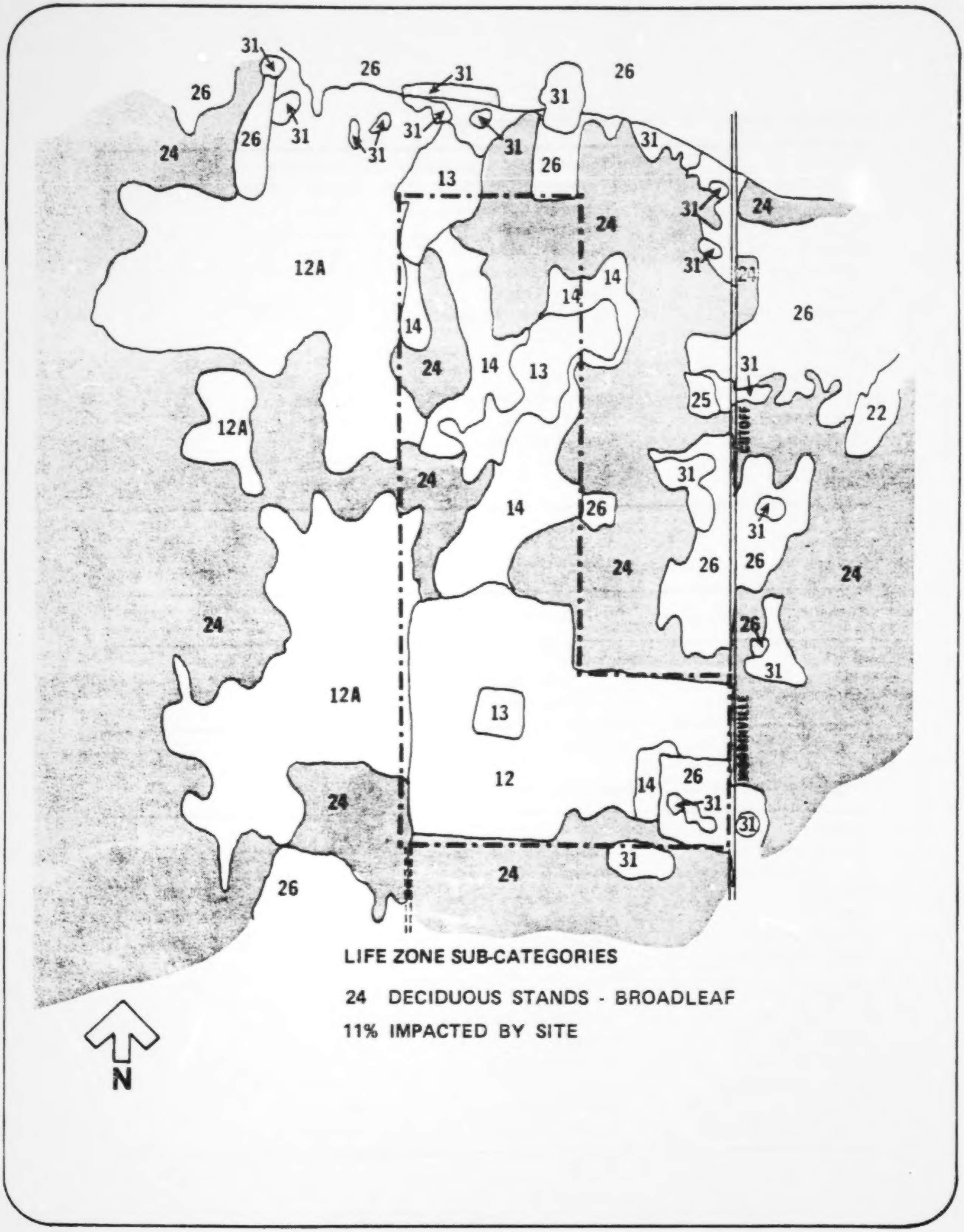
Rough-skinned Newt
W. Red-backed Salamander
Red-legged Frog
Northwestern Salamander
Western Toad
Long-toed Salamander
Pacific Tree Frog

Reptilia

Northern Alligator Lizard
Western Garter Snake
Rubber Snake
Common Garter Snake
Northwestern Garter Snake

Aves

Cooper's Hawk
Red-tailed Hawk
Screech Owl
Ruffed Grouse
Rufous Hummingbird
Flicker
Yellow-bellied Sapsucker
Common Crow
Black-capped Chickadee
Bushtit
House Wren
Robin
Bewick's Wren
Golden-crowned Kinglet
McGillivray's Warbler
Wilson's Warbler
Bullock's Oriole
Brown-headed Cowbird
Black-headed Grosbeak
Purple Finch
Pine Siskin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LIFE ZONE SUB-CATEGORIES

24 DECIDUOUS STANDS - BROADLEAF

11% IMPACTED BY SITE

ECOLOGICAL ZONES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE B-4

Vertebrates Common To Life Zone Subcategory (Cont.)

Downy Woodpecker
Traill's Flycathcer
Western Wood Pewee
Violet-green Swallow
Tree Swallow
Yellow Warbler

Cedar Waxwing
Starling
Rey-eyed Vireo
Warbling Vireo
Orange-crowned Warbler

Oregon Junco
Chipping Sparrow
White-crowned Sparrow
Golden-crowned Sparrow
Rough-winged Swallow

Mammalia

Short-tailed Weasel
Vagrant Shrew
Mountain Beaver
Pacific Jumping Mouse
Black Bear

Striped Skunk
Shrew Mole
Deer Mouse
Black-tailed Deer
Racoon

Spotted Skunk
Coast Mole
Oregon Vole
Coyote
Long-tailed Weasel

Cathcart Site — Life Zone Subcategories

Symbol	Subcategories	Description
26	Meadow	Prairies, pastures, golf courses, etc.

Vertebrates Common To Subcategory 14 Percent Impacted By Site

Amphibia.

None Detected

Reptilia

None Detected

Aves

Red-tailed Hawk
Sparrow Hawk
Common Snipe
Starling
Savannah Sparrow

Rough-legged Hawk
Sparrow Hawk
Short-eared Owl
Western Meadowlark
Vesper Sparrow

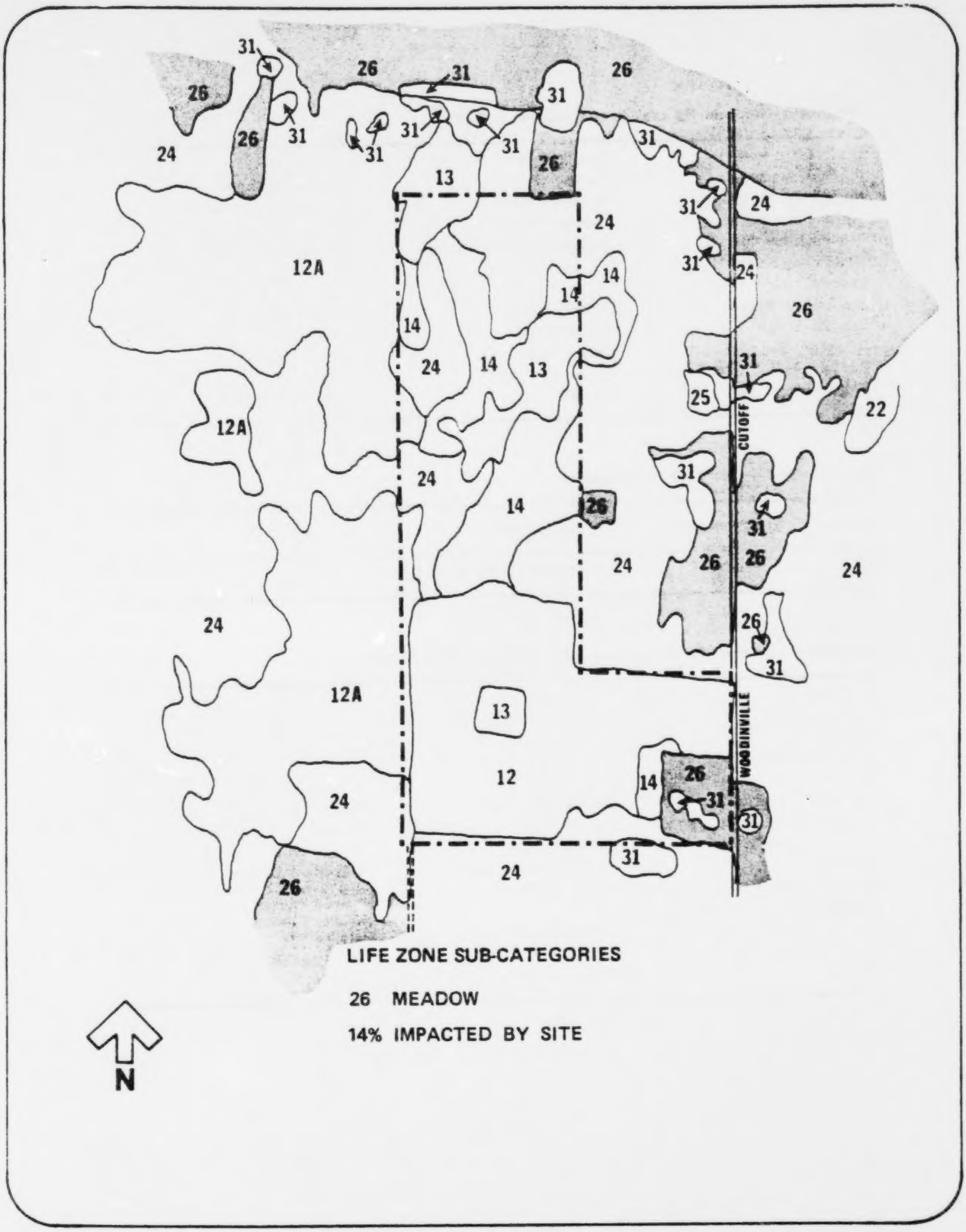
Marsh Hawk
Killdeer
Water Pipit
Brewer's Blackbird

Mammalia

Vagrant Shrew
Mazama Pocket Gopher
Coyote

Townsend's Mole
Oregon Vole
Striped Skunk

Coast Mole
Pacific Jumping Mouse
Townsend's Vole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12A
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WOODINVILLE
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LIFE ZONE SUB-CATEGORIES

26 MEADOW

14% IMPACTED BY SITE

ECOLOGICAL ZONES

CATHCART SANITARY LANDFILL ENVIRONMENTAL IMPACT STATEMENT · FIGURE B-5

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